

## Section 301

# The Roles of Police Officers and Coroners

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### Section 301.1

#### Introduction

The roles of law enforcement officers and coroners are slightly different at a death scene. Law enforcement officers are concerned with whether a crime has occurred. They approach each unknown death scene with the idea that a crime has occurred and they work backward from that premise. Once they have established that a crime has not occurred, their mission has been fulfilled.

The role of the coroner is broader in nature. The coroner is concerned with establishing the manner and cause of death in all unknown-cause deaths. The importance of the coroner's investigation is not diminished if a crime has not occurred. The difference between a suicide and an accident can often be very important to the victim's family. Many insurance policies will not pay off on a suicide. Also, some life insurance policies pay double or triple the value of the life insurance policy if the insured's death is ruled an accident. Thus, the coroner's role is more extensive than that of law enforcement officers.

There are two major considerations for coroners in their relationship to law enforcement personnel and agencies: cooperation and independence. *Cooperation* between the coroner and law enforcement personnel will be mutually beneficial. The coroner will benefit from the experience, expertise and resources provided by law enforcement officers. Law enforcement personnel will benefit from the coroner's experience and expertise in establishing manner and cause of death.

Cooperative relationships seldom develop spontaneously. All parties need to work to build productive working relationships. While partnerships inspire cooperation, hierarchical relationships can limit the flow of information. Law enforcement officers often arrive at death scenes long before coroners can free themselves from other duties and obligations. The frustrations of those waiting to move forward and those caught in the frenzy of clearing their schedule can easily be misinterpreted. Unless everyone appreciates the demands placed on all parties, the working environment can be poisoned. Team building requires constant work.

Once the coroner has ruled the death was not the result of a criminal act, law enforcement personnel can be released from the scene. However, most agency personnel will remain on the scene as long as they can be of assistance to the coroner.

*Independence* is perhaps the *key* element in the coroner/law enforcement relationship. The coroner and the law enforcement personnel at the scene should pursue their investigation in a cooperative manner. The search, collection and packaging of evidence, and documenting the scene should be done together. However, the coroner and the law enforcement investigators should be independent of each other in rendering a

determination of the manner and cause of death. Both should attempt to eliminate any discrepancies in determining the manner of death. Hopefully, the facts of the case and the evidence collected will help resolve any discrepancies in determining a manner-of-death decision that is satisfactory to both agencies.

**Caution:** The coroner is ultimately responsible for determining the manner and cause of death. Therefore, it is imperative that your determination of manner and cause of death be one that you can defend.

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### Section 301.2

#### Search, Collection, Preservation and Processing of Evidence

Every coroner and every law enforcement officer will probably, at one time or another, have to do one or more of the following activities related to physical evidence:

- Search for evidence
- Collect evidence
- Preserve evidence
- Process evidence for examination

Thus, it is very important that every coroner and every law enforcement officer understand the importance of physical evidence as it relates to the successful resolution of a criminal case and the successful prosecution of the offender.

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### Section 301.3

#### The Importance of Physical Evidence

Physical evidence, when properly collected and preserved, is the most valuable tool in the resolution of a criminal investigation. It is also a most valuable tool in obtaining a conviction in court. Physical evidence is so important for a number of reasons:

- It cannot generally be **retracted**.
- It is generally **not subject to subjective analysis**.
- It can often be **specifically linked to a particular person or event** through scientific analysis.
- Its use is **not precluded by the Fifth Amendment's** protection against self-incrimination clause.

Physical evidence that is not properly collected and marked may not be suitable for laboratory analysis or introduction into court.

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### Section 301.4

#### Physical Evidence Cannot Generally Be Retracted

All too often, investigative personnel (coroners and police) have, or have had, to rely on the **verbal** testimony of victims, witnesses, and/or suspects involved in crime. There are few investigators who have not been burnt by one or more of these individuals going into court and recanting or retracting the verbal statements he/she made during the investigation. Testimonial evidence also suffers from the limitations of individuals to observe, recall and articulate the events in question. Just as importantly, many investigators have witnessed the loss of a legally obtained confession due to the vagaries of the law and/or the subjective decision of a judge or attorney. **Physical evidence**, on the other hand, is normally not subject to retraction. A weapon with the suspect's fingerprints is generally considered to be **positive** proof of an event. This also holds true for such physical evidence as fingerprints, narcotics, shoe and tire impressions, bullet comparisons and DNA matches made from an individual's blood or semen stains found at the crime scene.

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### Section 301.5

### **Physical Evidence Is Not Subject to Subjective Analysis**

Coroners and law enforcement officers are aware of criminal cases involving real, or alleged, mental incompetence or insanity on the part of the suspect/defendant. In these cases, the court or jury is asked to render a judgment made on the basis of testimony from experts from the fields of psychiatry and psychology. Generally, these experts render a subjective opinion based on the same tests and valuative measures. However, in nearly all cases the diagnoses will vary according to who is paying for the analysis (expert's opinion), *e.g.*, the state or the defendant.

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#### **Section 301.6**

### **Physical Evidence Can Often Be Linked to a Specific Person or Event Through Scientific Analysis**

Through scientific analysis we can link specific types and items of physical evidence to a particular person or event. For example, through **bullet comparison**, it is possible to determine whether, or not, two bullets (one known and one unknown) were fired from the same gun. It is possible to **conclusively link** one person to a crime scene through the analysis of fingerprints, shoe and tire impressions, DNA testing, and numerous other type of physical evidence.

#### **Section 301.7**

### **Physical Evidence Does Not Fall under the Fifth Amendment's Protection Against Self-Incrimination Clause**

The United States Supreme Court has ruled in a number of cases, including *Schmerber v. California*, 384 U.S. 757 (1966), that physical evidence, such as fingerprints, blood, urine, photographs, and handwriting exemplars, are not protected by the Fifth Amendment's protection against self-incrimination clause. Thus, as long as physical evidence is collected and preserved in a legally correct manner it can and generally will be used in a court of law. Furthermore, the scientific analysis is generally considered to be irrefutable; *e.g.*, fingerprint and bullet comparisons and DNA comparison. This latter statement is based on the recognized level of expertise and record of the comparison expert.

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#### **Section 301.8**

### **Physical Evidence and the Courts**

A **National Institute of Justice** study by Joseph L. Peterson (1987) disclosed the scientific analysis of physical evidence was significant in three areas of the criminal justice process:

- Case Resolution
  - Fewer Inappropriate Plea Bargains
  - Stricter Sentences
- 

#### **Section 301.9**

### **Case Resolution**

It is generally accepted throughout the criminal justice system that physical evidence is extremely important in case resolution. For example, a confession by a suspect is only admissible in court if there is corroborating evidence to establish the corpus delicti of the crime, *e.g.*, physical evidence or witnesses. In many crimes, such as homicide, there is no living witness. Thus, the presence of physical evidence is extremely important.

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#### **Section 301.10**

### **Fewer Inappropriate Plea Bargains**

Prosecutors are generally very reluctant to try a case they might lose. Most prosecutors want to plea bargain

**weak** cases. The presence of physical evidence that has been subjected to scientific analysis often will provide the prosecutor with a very strong case. Therefore, they are more likely to take the case to court.

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### **Section 301.11 More Appropriate Sentences**

It stands to reason that both juries and judges will be more willing to render more appropriate sentences when their judgments are supported by scientifically analyzed evidence. This occurs because the scientific analysis is often irrefutable and specifically links the defendant to the crime or weapon.

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### **Section 301.12 Obstacles to Use of Physical Evidence in Court**

Investigators (coroners and police) face three major obstacles that must be overcome before using physical evidence in court. These obstacles arise from the efforts of the defense attorneys. They include:

- Question the search/search warrant.
- Question the forensic expert's credentials.
- Question the results of the expert's analysis.

#### **§ 301.12.1**

##### **Question the Search/Search Warrant**

Most attorneys will question how the physical evidence was obtained as a **basic** rule of criminal defense. It is essential that the investigator be able to demonstrate that any and all evidence was **legally** obtained. Thus, any warrantless searches may be challenged and must be justifiable. It is always preferable to secure a search warrant before searching. Remember, there is no homicide exception to the requirement for a search warrant.

All searches resulting from a warrant must stand up to legal scrutiny. To be legal a search warrant must:

- be based on probable cause,
- be specific as to who, what, where is to be searched,
- be signed by a neutral magistrate.

#### **§ 301.12.2**

##### **Question the Forensic Expert's Credentials**

This is generally not a problem if the expert is associated with a professionally accredited organization or agency, *e.g.*, Indiana State Police Laboratory or FBI Laboratory. Many problems arise from the use of private laboratories. Unqualified personnel often staff these laboratories. This problem arises from the lack of standardization in the operation of "crime laboratories" throughout the United States. It is essential to use fully accredited laboratories if this obstacle is to be avoided.

#### **§ 301.12.3**

##### **Question the Results of the Expert's Analysis**

If the defense cannot prevent the admissibility of the evidence or discredit the expert, it must attack the analysis itself. This can be avoided or considerably reduced by using only accredited laboratories and experts. However, if other laboratories are used the results of the expert's analysis may be successfully discredited.

One way in which the defense can attack or discredit an expert's analysis is by questioning the analysis method and/or technique. For example: Andre Moenssens, *et al.*, (1986:229) point out that the Dermal Nitrate Test for gunshot residue often produced "false positives." This was due to the fact that people in many

professions, to include photography and farming, often come into contact with nitrates that are found in materials other than gunpowder.

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### Section 301.13 The First Responder

The **First Responder** is the first **official person** (coroner, law enforcement, emergency medical technician or fireman) to arrive at the scene. The **First Responder** is the **key** to the successful recognition, collection and preservation of **physical evidence**. Generally, once physical evidence is destroyed or altered it cannot be restored or corrected. Thus, it is highly important that the first responder be knowledgeable of how to **recognize** and **protect** physical evidence. If the first responder is also the primary investigator, it is also important to know how to **collect** and **preserve** physical evidence.

In this section, we will discuss the **duties** of the first responder. It is important that every investigator know the basics of evidence recognition, collection and preservation. Every coroner or law enforcement officer, will at one time or another, have to do each of these tasks. It is **extremely important** that these tasks **be done right the first time** as, normally, there is no second chance.

#### § 301.13.1

##### **Duties of First Responder**

The duties of the first responder include:

- Rendering aid
- Securing the crime scene
- Recognizing and protecting evidence
- Apprehending the suspect(s)

The order these duties are performed is dictated by the conditions encountered at the crime scene. Frequently, these duties will be performed in order presented, but they are highly dependent on the circumstances facing the first responder. Clearly, other duties cannot be performed if the suspect is present and threatening victims or destroying evidence. Weather conditions may dictate that obvious evidence be protected before the scene can be completely secured.

#### § 301.13.2

##### **Render First Aid**

Every coroner or law enforcement officer responding to a crime scene, or possible crime scene, is to render aid to the victim(s). This aid may vary from calming an emotionally distraught victim to calling for an ambulance and/or the services of an Emergency Medical Team (EMT). The rendering of aid must be done with the idea that the first responder has other duties at the scene. Therefore, every attempt must be made to avoid disturbing the scene any more than necessary. The preservation of life should remain the **key** duty of any investigator responding to a scene in which a victim has suffered a life threatening injury.

#### § 301.13.3

##### **Secure the Scene**

Securing the crime scene is crucial. Every second the crime scene is unprotected could mean valuable evidence is destroyed. All unessential personnel should be excluded from the scene. This includes law enforcement officers, rescue personnel, medical personnel, relatives of the victim, witnesses, and reporters. Every time someone enters the scene, evidence can be altered, destroyed, or contaminated. Everyone should be excluded from the scene unless his or her presence is essential.

Securing the crime scene often requires some ingenuity. Seldom does the first responder have all the equipment and personnel to properly secure the area. First responders need to take advantage of natural barriers and be creative. It is also important to secure the entire crime scene including points of entry and escape routes. As

more is learned about the crime, it is easier to contract the size of the scene than to expand it. It is better to secure too much than too little. By the time investigators determine the crime scene is larger than first anticipated, the unprotected portions of the scene are probably contaminated.

A coroner or law enforcement officer does not know, in every case, if he or she is responding to a crime or not.

On many occasions it is learned that the victim, if there is one, suffered an accident. Also, many unknown death calls, result from natural or accidental causes. If this is the case, no further action is required of the law enforcement officer or agency. However, every call should be handled as a crime until it has been determined that no crime has occurred.

#### § 301.13.4

##### **Recognize and Protect Evidence**

The first responder needs to **recognize** and **protect** known or potential evidentiary items or materials. Every investigator should be capable of recognizing evidence and be knowledgeable of how to protect such evidence until it can be properly collected and preserved. Thus, the uniformed patrol officer plays a **key role** in the proper handling of physical evidence in many, if not most, crimes. In many, if not most death cases, the uniformed patrol officer will be the first responder.

#### § 301.13.5

##### **Apprehend Suspects**

It is the duty of the first law enforcement officer at the scene is to apprehend the suspect(s) of a crime or potential crime (Remember it is not always clearly understood if a crime has been committed or not). An officer must be flexible in carrying out this duty. In many cases the apprehension of the suspect(s) may come first.

This is particularly true if the suspect is still at the scene, if a violent struggle is in progress, or if the officer encounters a suspect before getting to the crime scene site.

**Caution:** Coroners, or their deputies, should not normally apprehend a suspect in a violent crime. This task should be left to trained law enforcement officers.

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### **Section 301.14**

#### **Three Basic Methods of Determining Death**

**Death:** The state in which all of a human being's vital functions cease permanently.

Three basic methods of determining if a person is dead at the scene:

- No breathing
- No pulse
- No muscle tone in eyes (Pupils fail to respond to changes in light and there is no muscle twitch when the eyes are touched)

**Caution:** The final determination of death should be left to qualified medical personnel; however, the initial determination of death by the first responder should considerably enhance investigative efforts.

#### § 301.14.1

##### **Preliminary Investigative Steps**

Three requirements that must be met by the first person to respond to a dead body call:

- **Help.** Provide assistance or call for emergency medical assistance if person is not dead.
- **Observe.** The officer must be observant for signs of violence, accident, or unusual behavior on the part of the victim's relatives, friends, or any witnesses.

- **Investigate.** The officer may be required to take preliminary investigative actions, to include securing the scene, protection of evidentiary materials, and initial interview of witnesses.

**Limitations** would be established by departmental policies or guidelines. Proper procedure for crime scene cooperation should be established by a memorandum of understanding between the coroner and the law enforcement agencies with which the coroner must work.

## Section 302

# Securing and Working the Death Scene

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### Section 302.1

#### Overview

The primary purpose of a Coroner's death scene investigation is to determine the manner and cause of death. The breadth of Indiana law empowers coroners to investigate the majority of deaths that occur in their jurisdictions. Common sense dictates that this power be tempered by the good judgment of the individual coroner. To do otherwise would place an unnecessary strain on already tight budgets and limited resources. The focus of this section is those deaths that may, or are likely to, result in legal action; *e.g.*, criminal charges or civil suit. Each of these deaths should be conducted in a systematic and methodical manner. (See Deaths to Be Investigated, Section 104.3.)

Due to the variety and complexity of situations that Coroners may encounter, it is impossible to formulate a single death investigation protocol that will cover all possibilities. Thus, two Death Scene Investigation Protocols (an example protocol and the Indiana State Police protocol) are included for assistance in conducting your death investigations. It is recommended that each coroner use the protocol with which he/she feels most comfortable, or the one that is jointly selected by coroner and the senior official of the law enforcement agency involved.

It is further suggested that a Memorandum of Understanding be formulated with each of the following: The Senior Official of each law enforcement agency, Administrators of Hospitals, Nursing Homes and Correctional Institutions, and the County Emergency Management Director within your jurisdiction. These MOUs should spell out such things as notification procedures, contact person and types of deaths that are considered to be coroner's cases. (Note: See Section 204.1.1 for additional items to be considered in an MOU.)

**Note:** Most crime scenes will be processed by law enforcement personnel/crime scene technicians. In these instances the coroner *should function as an administrator* of the process.

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### Section 302.2

#### Administration and Management of Death Investigation Scenes

##### § 302.2.1

##### **Pre-Death Scene Preparation**

Prior preparation can prevent oversight or mistakes at a death scene. Most law enforcement crime scene technicians maintain and keep a crime-scene kit with them at all times. Coroners could also benefit from this practice. A coroner's kit could contain evidence packaging and collection materials, blank forms, extra paper and pens, and chain-of-custody receipts. A camera and carrying case with extra rolls of film is also helpful if you do your own photography. The kit should also contain surgical gloves and masks, special clothing for the investigation, and any other items that are commonly used by you or your staff members at a death scene investigation.

**Note:** Each coroner's kit should contain information about OSHA Standards. Contact IOSHA for information

concerning standards, equipment, and training requirements.

### § 302.2.2

#### **Memorandum of Understanding**

The formulation of a Memorandum of Understanding (MOU) with concerned agencies will also be helpful in pre-death scene preparation. The MOU will establish the notification procedures, person-in-charge of the death scene, person responsible for securing the death scene, person responsible for insuring proper personnel are at the death scene, the photographer, the sketch preparer, evidence collector and recorder, necessary notifications for the type of death being investigated, coordination with news media and other concerned

agencies, and search warrant requirements. The MOU should also contain the duties of the First Responder to a death scene. The safety and comfort of all personnel connected to the investigation should be considered.

At a minimum consideration should be given to type of clothing required, communication needs, lighting, shelter, transportation, food, medical assistance, scene security and equipment needed. It is extremely important to have a MOU in area of multi-jurisdictional death scenes. The latter may require coordination with the administrators of two or more agencies. This is particularly true at a disaster scene such as the airplane crash in Newton County during the fall of 1994. (See Section 204.1.1 for additional items to be considered in an MOU.)

**Note:** Key players in establishing Memorandums of Understanding are the coroner, chief prosecutor, senior law enforcement officer for each agency (city, county, state and federal) within your jurisdiction, chief fire official, chief medical official, chief emergency medical technician, and correctional administrator that operates in your jurisdiction. Each of these individuals has a vested interest in insuring that all death investigations are satisfactorily resolved.

**Note:** It is suggested that members of the ISCTB or ISCA be contacted for assistance and/or guidance in establishing Memorandum of Understandings. (See also, Section 201.8, Indiana State Coroners Training Board.)

## **Section 302.3**

### **Death Scene Investigation Protocol**

#### § 302.3.1

##### **Step One - Secure and Isolate the Death Scene**

Response time is critical in a death investigation. Therefore, it is incumbent on the coroner to respond as quickly as possible after notification. Generally, notification will come from medical or law enforcement personnel; however, on occasion notification may come from other sources to include family members. If the notification comes from another source you should immediately notify the law enforcement agency having jurisdiction. The agency should provide personnel to properly secure and control access to the scene and to assist in recovering and documenting evidence.

**The coroner is the person-in-charge at a death scene.**

#### **Example Death Scene Investigation Protocol**

- ① Secure and isolate the crime scene
- ② Record the scene
  - Photograph/videotape
  - do not move objects

- shoot close ups and overviews
- use scale when size/location is important
- Sketch
  - accurate distances
  - always indicate north
  - sketch of all dimensions/locations of evidence
- Notes
  - continuous throughout crime scene search
  - detailed description of scene
  - who, what, where, how and time evidence found
  - location/disposition of evidence
  - maintain chain of custody
- ③ Conduct systematic search
- ④ Collect & package evidence
- ⑤ Obtain control samples
- ⑥ Chain of custody
- ⑦ Submit evidence to laboratory
- ⑧ Release the death scene

The coroner is the person-in-charge at a death scene. Thus, you must insure that only essential personnel be allowed on the scene. Generally, the number of personnel can be limited to four; the coroner, or your designate, first responder, crime scene technician, and a law enforcement investigator. In cases involving natural, or man-made disasters, other personnel may be required.

The first step upon arrival at a death scene is to cordon off a perimeter that includes all areas that may contain evidentiary items or give clues to establishing the manner and cause of death. There should be one entry/exit area and its use should be limited to those personnel involved in evaluating the scene. A list of all personnel entering or leaving the cordoned area should be documented so as to preserve evidence and to insure nothing is removed from the scene. Those entering the scene must be willing to provide exemplars of their fingerprints, shoe prints, head and pubic hair if necessary.

Constant vigilance must be maintained to protect against the creation of artifactual evidence (such as foot and fingerprints, cigarette butts or the movement of evidence from its original position). It should also be remembered that each time the body of the decedent is touched or moved, there is a danger of losing or contaminating valuable evidence. Contamination can occur through the process known as cross-transference, the exchange of hairs, fibers, or body fluids of one individual to another.

Witnesses and suspects may be present at the scene. It is essential that they be detained and separated immediately. This is to insure that they will not collaborate on their statements concerning the events surrounding the death. At this point the investigation of the death can begin.

**Note:** Every death investigation is concerned with establishing answers to the following questions: who, what, when, where, how and, why. The latter is often not possible, but many artifacts found at the death scene may offer clues; *e.g.*, a note left by the victim of a gunshot death. Often the answers to some of these questions may not be revealed until an autopsy is performed.

**Caution:** A common mistake is to offer opinions at the scene before the body is cleaned and before an autopsy is done. Only make the necessary observations for the ongoing investigation. Do not discuss injuries with the media until after a complete autopsy has been performed. (See Section 501.3.)

**Note:** It may be helpful to involve your local pathologist early on in the case, by inviting him/her to the scene.

An experienced coroner's pathologist should be invited to the scene in cases involving mass murders, blunt force injury homicides, "decomposing" homicides, and any other case in which the coroner needs medical expertise. If you are unsure you should call your pathologist and discuss the case. (This recommendation will depend on how willing your local pathologist is to be involved at the death scene.)

### § 302.3.2

#### **Step Two - Record the Scene**

Thorough documentation of the scene is paramount for a death investigation. This can be accomplished through photographing and sketching the scene and by taking continuous notes.

**Photography.** It is your duty to insure that a thorough photographic documentation of the body and surrounding scene is completed. You may take your own photographs or you may request assistance from a law enforcement officer or crime scene technician. The latter may be better-trained photographers, but you must be specific in requesting the photographs you want. This is because law enforcement officers have somewhat different objectives in mind when taking photographs and they may not take the shots you require for your final report. Videotaping or the use of Polaroid cameras may be useful. They provide views of the scene that may satisfy curious individuals or agencies such as news media personnel. All photographs should include a date and a case number to avoid confusion at a later date. It is essential that the scene be photographed before it is disturbed. You must be able to produce photographs that accurately depict the scene as originally found, prior to removal of the body or evidence.

After the initial photographs of the body and surrounding area are taken, and sketches have been made, the body may be removed. The body may not be removed without consent of the coroner and it should not be moved if it would endanger any evidentiary item or matter.

When photographing the scene, you should remember:

1. You should be familiar with the camera and system used. Proper lighting is essential to good photographs.
2. "Instant" print cameras can be useful to insure useable photographs have been obtained. However, it should be noted the photographs tend to fade over a period of time.
3. When photographing the scene, start with wide angle, distant views. A 360° pattern of photographs should be obtained when possible. Then move in to intermediate and close-up views of the body. After taking close-up views, take distant views in a 360° pattern, using the body as the center. Inside a room,

you should start on one wall and take over-lapping views until you have a complete 360° view of the room.

4. Photographs taken at eye level provide the most normal perspective of the scene. Close-up photographs should be taken straight on to avoid distortion.
5. Take several rolls of photographs. You only get one chance at an undisturbed scene. If you are to err, err on the side of over-shooting the scene, rather than under-shooting.
6. All data concerning the photographs should be documented, to include type of lens, distance from subject, lens setting, and direction of focus.
7. The camera position should be noted on the back of all photographs and correlated with the death scene sketch.
8. Do not disturb or remove the decedent's clothing or foreign material in order to photograph injuries at the scene. Remember unnecessary handling of the body may destroy or contaminate valuable evidence. Injuries to the body will be photographed during the autopsy or at the morgue.
9. Videotaping of the scene can be advantageous in demonstrating the topography of the scene, and relationship of the body to surrounding objects. However, it will not substitute for the detail provided by still photographs. *Never* videotape a process such as evidence collection or autopsy. This is an unnecessary distraction that could result in a mistake being made.
10. Regardless of their detail, photographs do not substitute for an accurately rendered death scene sketch.

The sketch is essential to show overall relationships.

**Sketching.** Depending on your individual skills in this area, you may again request assistance from law enforcement personnel. Regardless of who completes the sketch, it must include the measured distances and overall relationships within the death scene perimeter. A sketch should be made at the death scene and it should not be altered once removed from the scene. The date, case number, location, sketcher's name, and names of the investigative team should be included on the sketch. The sketch need not be drawn to scale, but *accurate measurements* from immovable objects must be included. It may be appropriate to make more than one sketch, as several uncomplicated sketches are superior to one that is large and busy. All measurements should be verified by at least two members of the investigating team and their names should appear on the sketch or sketches. Three basic methods of sketching a scene (Cross-Projection, Triangulation, and Baseline) are provided for your use.

When preparing a rough sketch (regardless of the method), you must insure the following basics are adhered to; accurate measurements, legibility, and that the factual data is clear and meaningful. The following is a general progression in preparing sketches:

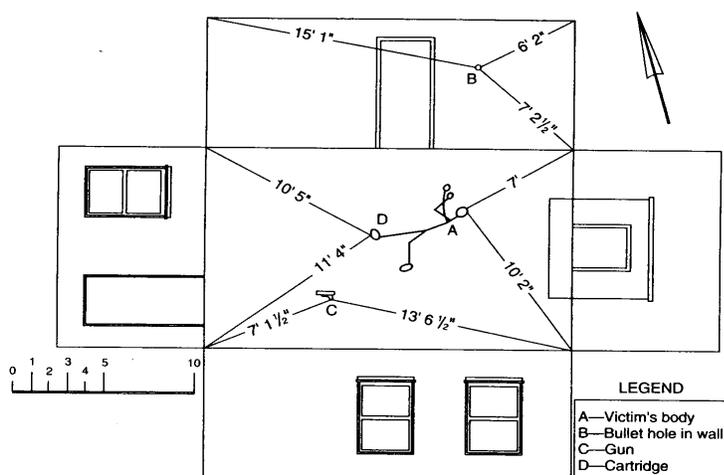
- (1) Lay out the basic perimeter
- (2) Insert fixed objects such as furniture, or a tree or fence post if outdoors
- (3) Insert evidence as it is recovered.
- (4) Insert the compass direction of North.
- (5) Whether the sketch is drawn to scale.
- (6) Record appropriate measurements and indicate the measurement system used (e.g. metric) and the identification number of the measuring device.
- (7) A legend that explains all symbols or letters used in the sketch (case number, name of victim, location, date, hour of sketch and sketcher's name and persons verifying measurements). See below for a sample legend.

#### Sample Sketch Legend

LEGEND	N	Case # 001-95, Suicide
A. Victim		Location: 410 E. 10th Street
B. Shotgun	W	
C. Bed		4:00 p.m., October 6, 2001
D. Note	S	Det. H. Smith
E. Dresser		Verified by Capt. Starr
F. Camera Position		New City Police Department
Scale: 1" equals 1 foot		

**Cross-Projection Method.** Cross-projecting in sketching is most useful when the items or location of interest are on or in a wall or an enclosed space such as a room or building. The walls, windows, and doors in a cross-projection sketch are drawn as though the walls had been folded flat on the floor. The measurements from a given point on the floor to the wall are then sketched.

#### Cross-Projection Sketch



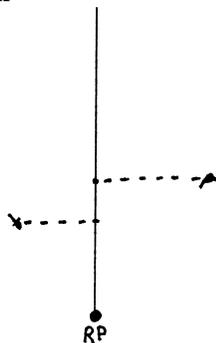
**Triangulation Method.** This method is most frequently used in outdoor settings where there are no easily identifiable reference points. In this method two or more reference points are located. These should be widely separated, if possible. The item of evidence or interest is then documented by measuring along a straight line from the reference points to the item.

### Triangulation Sketch

**Baseline Method.** A straight line (baseline) is used as a reference to locate evidence. The investigator measures the location of evidence at right angles to the line. A baseline can be a natural line (ex. intersection of floor and wall, edge or road, etc.) or an artificially created line (ex. string, chalk, or tape line). A reference point on the baseline is identified or created to serve as the basis for measurements. ) If the reference point is created, it must be located in relation to some fixed point.) Evidence is then located in its relationship to the reference point on the baseline. For example, a piece of evidence might be found five feet-three inches north of the reference point on the baseline and four feet-two inches east of the baseline (measured at a right angle).

### Baseline Sketch

N ↑



	N	S	E	W
Knife	3'6"			3'1"
Gun	5'3"		4'2"	

**Note:** The ultimate tool of the coroner should be the continuous and thorough documentation of the death scene investigation. Photographs and sketches are important to the successful conclusion of an investigation. However, they cannot replace the impressions and experience of the investigator evaluating the scene. You should keep a detailed narrative description of the investigation from moment of notification to release of the scene. The narrative should describe type, location, and disposition of every piece of evidence seized. You should also document all pertinent times and the who, what, where, when and how of every aspect of the death scene investigation. This can be done in writing or by recording. If you use a recorder, you should always include extra batteries and you should periodically check that it is working.

#### § 302.3.3

##### Step Three – Conduct Systematic Search

Death scene searches should be approached in a progressive manner. There are three general phases in conducting a systematic search. First, conduct a preliminary walk-through of the scene. During this phase you are looking for obvious evidentiary items or material.

*Caution* is the operative word during this phase, as you do not want to destroy or contaminate existing evidence. Do not walk directly to the body and try to avoid taking the same route through the crime scene likely taken by the suspect. Your presence at this point, while necessary to formulate an investigative strategy, is jeopardizing any trace evidence present.

Second, conduct a second search for evidence that is not obvious or which may have been intentionally hidden. The operative word in this phase is *vigorous*. During this phase you look for concealed items or areas that might contain evidence. Nothing should be left to chance during this phase of the search. The third phase, is a survey of the search results. It is necessary to insure all evidence has been collected, packaged and properly preserved. Insure the evidence log is properly completed and each item of evidence has been properly marked and that a chain-of-custody has been established.

#### § 302.3.3.1

##### Crime Scene Search Patterns

There are four specialized search patterns that are commonly used. The specific pattern used is determined by the topography and size of the search area. For example, the quadrant or zone pattern is often used in searching rooms or buildings. The strip or grid patterns may be more useful in an outdoor search. The grid method is useful in searching for weapons or bodies in open areas. The retracing of the searcher's steps often reveals objects that are obscured by the normal light and shadows that exist in outdoor areas. Diagrams of the four search patterns: strip, grid, spiral and quadrant or zone are provided below.

## Crime Scene Search Patterns

Strip

Grid

Spiral

Quadrant

### § 302.3.4

#### **Step Four – Collect and Package Evidence**

Collection of evidence is perhaps the most time consuming and critical element of the death scene investigation.

Generally, evidence is collected, marked and packaged during the search process. On occasion an item of evidence may be marked and protected for collection at the end of this search. For example, a fingerprint or footprint found on a door. Occasionally, the door containing the latent print will be seized as evidence and the door will be transported to the crime laboratory for collection and analysis of the latent print. It is advisable to let law enforcement personnel collect all evidentiary items or materials not directly connected to the body. Examples of this type of evidence would be firearms, knives, latent prints and similar evidence. The collection should normally be done by a trained crime scene technician. If your local law enforcement agency does not have such personnel, the services of an Indiana State Police Evidence Technician may be requested. (**Note:** Be patient, if it is necessary to request the assistance of the Indiana State Police (ISP). ISP evidence technicians are located in regional offices and it may take a few hours for a technician to get to the scene.) A photograph

of each item of evidence should be obtained before the item is disturbed in any way. Photographing the item should apply whether a crime scene technician or a coroner collects the evidence.

You should maintain an evidence log of all evidence collected during the search. Chain-of-Custody must be established immediately upon collection. Remember to record the precise location of the evidence, who collected it, and its disposition; *e.g.*, was it maintained by law enforcement or turned over to personnel from the coroner's office. Also, the type of evidence and its location should be annotated on the death scene sketch. Remember to collect control samples of evidence if necessary. Instances where control samples would be required include: (1) obtaining whole blood samples from victim(s) and suspect(s) when bloodstains are present, (2) obtaining control samples of soil when soil evidence is collected, (3) obtaining control hair samples from victim(s), suspect(s), and other personnel as necessary when hair evidence is collected, and (4) perhaps most commonly, collect control prints from victim(s) and other personnel as necessary, when latent finger or footprints are collected. The control samples must be collected, packaged, recorded and handled with the same care and diligence as the other evidence obtained at the death scene.

It is recommended you contact the appropriate forensic expert prior to collecting "specialized" evidence such as insects, soil or skeletal remains. Special handling and collection techniques may be required. It is generally best if the forensic expert can come to the death scene and participate in the recognition, collection and preservation of "specialized" evidence. If, the expert cannot come to the scene, he or she will be able to assist you in finding and collecting items or materials that might normally be over-looked.

#### § 302.3.5

##### **Step Five -- Reconstruction of Events Leading to the Death**

Reconstruction of the events leading to the death of the decedent(s) is helpful in determining the manner and cause of death. Conducting a thorough death scene search and accurately documenting the location of the body and all evidentiary items recovered at the scene enhance the accuracy of reconstruction. Reconstruction of events can lead to successfully answering the essential questions of who, what, where, why, when and how of a death. For example, one of the elements in determining whether a gunshot death is a homicide or suicide is the location of the recovered weapon in relation to the body's position. Generally, you would rule out suicide if you find a decedent in his bed with a contact wound to the head and the suspect weapon is found on the floor thirty feet away. Nevertheless, you must consider that evidence may have been moved prior to your arrival, and some mortally wounded individuals remain remarkably mobile for a brief time prior to death.

#### § 302.3.6

##### **Step Six -- Chain-of-Custody**

Every coroner's case has the potential of becoming a court case. Thus, it is essential that a chain-of-custody receipt be completed at the time and location each piece of evidence is collected. *Continuity of possession* must be verifiable at all times. A failure to establish continuity of possession may result in the court's refusal to admit the evidence into trial. In some criminal cases every person having handled the evidence is required to testify to the authenticity and integrity of the chain-of-custody. Thus, it is imperative that persons having access to collected evidence be restricted to the minimum necessary. At a minimum the chain-of-custody should include: (1) the date, time, and location where evidence was found, (2) the case number, (3) the person collecting the evidence, (4) the person storing the evidence, and (5) and any person who handles the evidence thereafter, to include laboratory personnel.

An evidence log should also be established. The log should contain a complete listing of all evidence collected and its disposition. If a crime has occurred, or the determination of whether a crime has occurred cannot be made at the scene, the law enforcement representative will take possession of the evidence and the original of the evidence log. However, the coroner is entitled to, and should, receive a copy of the completed evidence log. The copy of the log should be retained in the coroner's records until final disposition of the case.

**§ 302.3.7****Step Seven – Submit Evidence to Laboratory**

Coroners are not restricted in the evidence they may collect or request analysis of; however, due to limited personnel and resources it is suggested that law enforcement agencies submit the appropriate evidence to the laboratory. This is especially true if a criminal, or potential criminal, case is involved. However, on routine death cases such as vehicular accidents, the coroner will likely submit evidence as necessary. Generally, coroners will submit toxicological or pharmaceutical materials to the appropriate lab.

Evidence is generally sent to crime laboratories via the mail system; however, personal delivery is also appropriate at times. It is essential that you include the chain-of-custody receipt with the evidence. The evidence should be double-wrapped. The evidence and chain-of-custody receipt should be packaged in the manner that is appropriate for the type of evidence being submitted and then enclosed in an envelope or wrapped heavy paper. You should place your return address and the address of the laboratory on the envelope or paper, and then you should attach an examination request form. The evidence request form should contain a complete list of the evidence being submitted. The entire package containing the evidence and chain-of-custody should then be placed into another envelope or wrapped in heavy paper. Write your return address and the laboratory's address on the outer-wrap and mail the package. Evidence that is mailed to the laboratory should be mailed via Certified or Registered Mail with Return Receipt requested.

The examination request form should contain the particulars of the case, the type of examination requested and the complete list of evidence being submitted. The evidence should be sequentially numbered. The requests should indicate which items of evidence are being submitted for a specific type of analysis. Remember the laboratory analyst may not adhere to your exact request. The analyst may discover additional evidentiary material or matter that will change the complexity of the case, thus requiring alternative analyses.

**§ 302.3.8****Step Eight – Release the Death Scene**

The crime scene is released when you and/or the law enforcement personnel have determined that all the appropriate death evaluation steps have been taken, and that nothing further can be learned about the decedent's death.

**Caution:** There is a tendency to remove the decedent's body too quickly. This haste is often the result of concern for the feelings of anxious family members or relatives. But be aware that nothing can help the decedent at this time. In many cases a few extra minutes or hours at a death scene may spare the decedent's family additional emotional trauma at a later date.

Remember once the body has been removed or disturbed it cannot be replaced. To re-enter the death scene may be impossible, or require a search warrant, once it is released. Perhaps more importantly, when you release the scene, you release control of the area and all it contains. Also, it is unlikely it will remain undisturbed for very long after your departure. Thus, it is suggested that you not release the scene until you are absolutely certain that you have completed your evaluation and collected all the evidence and information you require to determine the manner and cause of death.

**Caution:** You may wish to be sensitive to the family involved if the victim's body is lying face down. However, this sensitivity must be tempered by your duty to conduct a thorough death investigation if a criminal or suspected criminal case is involved.

**Note:** The coroner is the final determiner of when to release the death scene.

**§ 302.3.9**

**Indiana State Police Seven Step Death Scene Protocol**

The following death scene protocol is presented with the concurrence of the Indiana State Police Laboratory. The information used was taken from Indiana State Police Standard Operating Procedure, Reference No. LAB-005, Subject: Evidence - Collection, Preservation, Transportation, and Analysis, dated August 1, 1995.

**Indiana State Police  
Seven Step Crime Scene Protocol**

1. Establish the Dimension (Decision Making Process)
2. Establish Security
3. Designate Officer in Charge (OIC)
4. Plan and Communicate
5. Primary Survey
6. Secondary Survey
7. Collect and Preserve the Evidence

**§ 302.3.9.1****Step One -- Establish the Dimension (Decision Making Process)**

- a. Insure that the perimeter of the crime scene(s) is not narrowly defined.
  - b. Include access and escape route, *i.e.*, driveway, *etc.*
- (See Section 302.3.1 Step One - Secure and Isolate the Death Scene.)

**§ 302.3.9.2****Step Two – Establish Security**

- a. Utilize sentries, crime scene tape, rope, barriers, *etc.*, as necessary to secure the scene.
  - b. Maintain one point of entry and exit, and maintain a log of all persons who are permitted to enter the scene.
- (See Section 302.3.1 Step One - Secure and Isolate the Death Scene.)

**§ 302.3.9.3****Step Three – Designate Officer in Charge (OIC)**

- a. The first responder must seriously consider the competency level necessary to successfully complete steps 4 - 7 of this protocol.
  - (1) The officer may complete the crime scene investigation himself;
  - (2) The officer may complete the crime scene investigation with assistance from a field technician; or
  - (3) The officer may relinquish responsibility to another officer assigned by the post commander or a ranking officer.
  - (4) When the immediate services of a crime scene specialist are required, the crime scene technician should be notified within one hour.
- b. Also, consider the need to obtain a search warrant before proceeding to search for evidence. A legal,

extended crime search can be made only with:

- (1) a valid search warrant;
- (2) the consent of the accused or a person authorized by the accused, or
- (3) a third party having common authority over the premises or property.

**Note:** A search warrant or an explicit, valid consent to conduct a crime scene search is essential even when there is no reason to believe the crime scene owner or occupant is involved.

(See Section 302.3.1 Step One - Secure and Isolate the Death Scene.)

#### § 302.3.9.4

##### **Step Four -- Plan and Communicate**

- a. The first responder of the investigative team, when present identifies tasks to be accomplished.
- b. The OIC fixes responsibilities.

(See Section 302.3.1 Step One - Secure and Isolate the Death Scene)

#### § 302.3.9.5

##### **Step Five – Primary Survey**

- a. Conduct a walk-through to determine the crime scene elements. All members of the investigative team, if present, should participate. Consider:

- (1) Approach
- (2) Entry
- (3) Offense
- (4) Exit
- (5) Escape

- b. Obvious physical evidence must be located.

- c. Reconstruct the modus operandi and form alternative hypotheses of the event that took place based on the physical evidence at the crime scene.

(See Sections 302.3.3 Step Three - Conduct Systematic Search and 302.3.5 Reconstruction of Events Leading to the Death.)

#### § 302.3.9.6

##### **Step Six -- Secondary Survey (Crime Scene Technician, If Present, or the First Responder)**

- a. Conduct a close inspection for physical evidence.
- b. Complete notes, measurements, and photographs.
- c. Protect evidence as necessary.
- d. Crime scene reconstruction.

The responsible officer (for evidence collection) prepares documentation, *i.e.*, sketches, photographs, video, notes, to reconstruct the physical crime scene for presentation in court.

(See Sections 302.3.3 Step Three - Conduct Systematic Search; 302.3.2 Step Two - Record the Scene; and 302.3.5 Step Five - Reconstruction of Events Leading to the Death.)

#### § 302.3.9.7

##### **Step Seven – Collect and Preserve the Evidence**

This is the last step in processing the crime scene. Proper collection procedures must be followed. The crime scene technician, if present, or the first responder shall:

- a. Record the precise location of evidence
  - (1) Photographs
  - (2) Notes
  - (3) Sketches

- (4) Records
  - b. Conduct field examinations and collection procedures
  - c. Collect the evidence
    - (1) Mark for identification
    - (2) Package to prevent alteration, contamination, and provide for identification of fungible (*i.e.*, items which appear identical like grains of wheat or dollar bills) evidence.
  - d. Maintain chain of custody
  - e. Photograph all aspects of the scene with a scale in the field of view so that exact size can be determined. Additional photographs using the same camera position, lighting, and camera settings should be taken for those times when courts demand that nothing be introduced into the field of view. The date, time, location, and case number shall be recorded at the same time evidentiary photographs or videographs are taken. Videographs may supplement, but should not replace still photographs.
  - f. When photographs are not taken or when physical evidence is not recovered from the scene of a serious crime against person or property, the investigator (OIC) assigned shall prepare a report stating the reasons why.
  - g. Collect materials and substances from a known source, whenever available, for submission to the laboratory for comparison with physical evidence collected; and
  - h. The OIC, after consultation with the crime scene technician, if assigned, will be responsible to insure that all appropriate requests for laboratory analyses are made when the evidence collected is submitted to the laboratory. The laboratory will provide a written report of the findings of the analysis in all cases submitted. Any verbal reports given shall also be followed by a written report.
    - (1) The unit in possession of the evidence shall complete a Property Record and Receipt form, and shall deliver all physical evidence to the property officer or evidence clerk.
    - (2) Physical evidence shall normally be submitted to the laboratory as follows:
      - (a) By the United State Postal Service (certified or registered mail) in a secure package clearly marked “**EVIDENCE**” on the outside.
- (See Sections 302.3.4 Step Four - Collect and Package Evidence; 302.3.5 Step Five - Reconstruction of Events Leading to the Death; 302.3.6 Step Six - Chain of Custody; and 302.3.7 Step Seven - Submit Evidence to Laboratory.)

**Note:** The above protocol is a version of the Indiana State Police’s Seven Step Protocol. Any questions relating to this protocol should be directed to the Indiana State Coroners Training Board or your local Indiana State Police unit.

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#### Section 302.4 General Death Investigation References

Boddington, A., Garland, A. N. & Janaway, R. C. (1987). *Death, Decay and Reconstruction. Approaches to Archaeology and Forensic Science*. Manchester, Eng.: Manchester University Press.

Moenssens, A. A., Inbau, F. E. & Starrs, J. E. (1986). *Scientific Evidence in Criminal Cases*. Mineola, NY: The Foundation Press, Inc.

Spitz, W. & Fisher, R. (1993). *Medicolegal Investigation of Death*. Third Edition. Springfield, IL: Charles C. Thomas Publishers.

## Section 303

# Establishing Time of Death

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**Caution:** The material contained in this section is to be used as a guide only. The times and methods described may be superseded by local protocol or procedures. Final determination of time of death estimates should be made by a pathologist or other qualified physician.

### Section 303.1

#### Determining Death Has Occurred

A general definition of death is, "The state in which all of a human being's vital functions cease permanently. Generally, by the time the coroner arrives at the death scene, other personnel, to include Emergency Medical Technicians, have established that death has occurred. However, a coroner would not be wrong in checking to insure the victim is dead. The medical journals often contain articles referring to misdiagnosis of death. This is particularly true of the elderly and critically ill. Thus, to insure that death has occurred the coroner can take the following steps:

- A. Insure victim is not breathing.
- B. Insure victim does not have a pulse.
- C. Insure victim does not have muscle tone in the eyes. (Pupils fail to respond to changes in light and there is no muscle twitch when the eyes are touched.)

**Caution:** The final determination of death should be left to qualified medical personnel if the slightest doubt exists as to the victim's death. However, the initial determination of death by the first responder should considerably enhance investigative efforts.

There are a number of methods that can be used to establish time of death. Some can only be determined during an autopsy. Others may require the assistance of other forensic scientists, such as an entomologist. However, some can be accomplished at the death scene.

**Caution:** Establishing a time of death is *always* an estimate. Each method of determining a time of death is affected by the environment and other factors to include the victim's health at the time of death. Thus, *do not* get too tied up in determining time of death. Be as thorough as possible in using the method(s) available, but remember that whatever time of death you set, it is only an *estimate*.

### Section 303.2

#### Establishing Time of Death

There are currently seven major methods of determining **TIME OF DEATH**:

- Postmortem Lividity
- Rigor Mortis
- Putrefaction
- Body Temperature
- Soil Analysis
- Forensic Entomology
- Food Digestion

All methods of determining time of death are estimates and they are never exact. Combining two or more methods of estimating time of death should generally result in a more reliable date and time.

**Caution: Embalming** makes external/internal observations of: Postmortem Lividity (or Livor), Body Temperature, Rigor Mortis, and Putrefaction **worthless** in establishing time of death.

### Section 303.3

#### Postmortem Lividity (PL)

**Postmortem lividity refers to the discoloration of lower parts of the body as a result of gravity drawing blood to those areas.**

#### Colors May Indicate Cause of Death

- Purplish-Red to Cherry Red:
  - Carbon Monoxide Poison
  - Freezing
  - Cyanide Poisoning
- Purplish Blue
  - Asphyxial Deaths
- Dark Blue
  - Normal Death

**Pale or Blotched Areas**, referred to as "blanching," are the result of the body's weight compression preventing blood from entering the blood vessels.

#### Time Factors

- PL becomes visible in ½ to 3 hours after death.
- PL irreversible or **fixed** after 6 to 18 hours.
- Maximum PL occurs from 8 to 12 hours after death.

#### Variables Affecting Postmortem Lividity

- PL will be **less obvious** in an **anemic** person than a normal one. [*Anemia is a condition in which a person has a reduced number of red blood corpuscles, or amount of hemoglobin in the blood stream, or both.*]
- PL can be **distinguished from a bruise** in **two** ways:
  1. When a bruised area is cut it **will not drain**--PL **will** if not fixed.
  2. Prior to becoming **fixed** PL will "**blanch**" when pressure is applied--a bruise **will not**.

- Post Mortem Lividity **may not be visible** when a person is extremely **dark skinned**.
- 

### Section 303.4

#### Rigor Mortis (RM)

**Rigor Mortis is the postmortem stiffening of body musculature.**

#### Rigor Mortis Characteristics

- Rigor Mortis affects both the voluntary and involuntary muscles. It also affects the body's bone joints.
- Rigor Mortis is detectable in the smaller muscles first, such as the face, hands, feet and neck, and later in the larger muscle groups.
- Rigor Mortis leaves the body in the same manner; it begins in the small muscles and then progresses to the larger muscle groups.

#### Time Factors in Rigor Mortis

- RM will generally begin within **two to seven hours** after death.
- RM will begin in the smaller muscle groups.
- RM is **fully** achieved between **eleven and thirteen** hours.
- RM begins to **leave** the body (that is, the muscles will begin to relax) between **twelve and forty-eight hours** after death.

#### Variables Affecting Rigor Mortis

- **Heat** hastens the onset and relaxation of RM.
  - **Cold** delays the onset and relaxation of RM.
  - **Duration** (time) of RM is reduced in infants, diseased, or poorly nourished adults.
  - **Violent Deaths** or deaths involving extreme exertion may speed up the onset of RM, for example, deaths by electrocution or resulting from fights.
  - **Clothing** or lack of clothing may effect the onset of RM.
  - **Cadaveric Spasm**, the instantaneous tightening of a small muscle group, may confuse the timing of RM.  
*[For example, cadaveric spasm is the "death grip" that some suicide victims may have on a weapon, or a murder victim may have on an article of clothing, or other object, that was seized during a struggle with an assailant.]*
- 

### Section 303.5

#### Putrefaction

**The decomposition of the body after death by bacterial action, characterized by the production of malodorous products, bloating, and discoloration of the body.**

#### Characteristics of Putrefaction

- The onset of putrefaction is noted by a **greenish** color of the tissue around the abdominal wall.
- There is a buildup of **gases** in the body cavities and tissues.
- **Gases** generally begin to build up in the abdomen first.
- The skin of **Caucasians** turns progressively darker.
- **Blisters** filled with gases or fluids may form on the skin.

#### Time of Putrefaction

- Putrefaction is generally noticeable with **24 to 72 hours** after death.

### Variables Affecting Putrefaction

- A body that is **under water** or **buried in the soil** will putrefy at a **slower** rate. [*Generally one week in the air is the equivalent of two weeks in the water or eight weeks under the ground.*]
- Environmental temperature:
  - Decay may be present within **3** hours in **hot, humid** weather.
  - Decay may be **delayed** a day or more in **cold** weather.
  - **Animals** and **birds** may hasten the decay process.
  - **Clothing**, or lack of it, may also affect the rate of decomposition.
- Other factors **delaying** putrefaction:
  - Chemicals in the tissue, *e.g.*, **arsenic**.
  - Skin soaked in a petroleum-based product, *e.g.*, **kerosene**.

### Note: Drowning Deaths

Normally, the gases produced during putrefaction will cause a drowning victim's body to float to the surface. *Exceptions:* If the body has become entangled with some underwater hazard; *e.g.*; a tree root; or if it has been purposely weighted down, it may not float as a result of putrefaction.

### Note: Formation of Adipocere

Adipocere is the waxy, yellowish-white substance that is created from decomposed body fat just below the skin. *Adipocere* results from the decomposition of the body in water or wet soil. It will take an expert to determine how long the body has been in the water or wet soil.

### Note: Mummification

Mummification generally occurs in warm, dry climates where there is a sufficient flow of dry air that creates water loss (evaporation). The presence of large quantities of insects and bacteria in the air and soil serve to reduce the effects of mummification. Nevertheless, coroners should be aware that mummification can, and does, occur **in Indiana**.

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## Section 303.6 Body Temperature

**Estimating time of death from body temperature is inexact at best.**

### Body Temperature after Death

Generally, the body's temperature will drop at a fairly consistent rate until it reaches the temperature of the surrounding environment.

### Variables Affecting Body Temperature

- Clothing creates or assists in heat **retention**.
- Size of victim assists in heat **retention**.
- Amount of victim's body fat assists in heat **retention**.
- Ventilation.
- Environmental temperature.
- Elevation in room. A body on the floor will generally cool faster than one on a bed or table.
- Surface composition. A body on concrete will cool faster than one on carpeting.
- Physical activity prior to death.

- Age of victim.
- Diseases that are accompanied by high fevers will result in a **faster** rate of temperature drop.  
*Examples:* Cholera, cerebral stroke, brain injury, and heat stroke.
- Maggot activity. The energy created by maggots will **increase** the body temperature.

**Note:** While body temperature is inexact, it is suggested that an observation be made as to the warmth or coldness of the body to touch as compared to the environment in which the body is found. Because of all the variables involved, investigators should be very skeptical attempts to precisely determine time of death through body temperature.

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### Section 303.7 Forensic Entomology

**The study of fly and other insect life cycles in order to determine time of death. Flies and other insects go through similar life cycles.**

**Note:** The Indiana State Police can provide entomological collection kits and will provide expert assistance in collecting entomological evidence.

**Caution:** Each species of fly or insect will generally have its own specific life cycle. These cycles will generally have time spans somewhat different from the others. (For example, in mammals, man has a nine-month gestation cycle, while other mammals may vary from one or two months to a year.) **Thus, it is very important to determine the correct species of fly or insect before trying to estimate time of death.**

**Caution:** It is best to have a forensic entomologist collect entomological evidence. If one cannot be present, he/she should be contacted for assistance. In cases where a forensic entomologist cannot be contacted the following steps are suggested.

#### Collection of Evidence for Entomologists

- The **remains** should be photographed from a number of angles and positions. Macro photography should be used when photographing specific sites of insect infestations on the body. It is very important to note and photograph all major areas of maggot or other insect infestations on the body.
- Note **general observations** such as:
  - Is body in the sun or shade?
  - Condition of the soil? (Swampy or dry? Sandy or organic?)
  - What is the position of the body? (On its side, back, position of arms and legs).
  - Is the body lying in a wet area, shallow or deep water, or on dry soil?
- Obtain **temperature readings** at the time evidence is being collected.
  - Take reading at **3 to 4 feet** above the remains.
  - Take reading at **8" to 10"** above the remains.
  - Take reading at the ground surface.
  - Take reading from within the maggot mass (ball of maggots) if present
- Collect samples of flying and crawling insects over and near the remains.  
*Samples (adult flies, beetles and beetle larvae) can be preserved in a solution of 75%-80% ethyl alcohol.*
- Collect samples of **all** fly and insect matter on the remains (eggs, larvae, pupae and adults).  
*Note the location on the body and the condition of the body area. This may be very important as it*

*may indicate trauma or injury that occurred prior to death. Samples should also be preserved in a solution of 75%-80% ethyl alcohol.*

- **Live** maggots and eggs should also be collected if present.

*Live maggots and eggs should be placed in paper cups with two or three ounces of beef liver as a food source.* The entomologist can hatch the eggs and observe the growth of the larvae to determine species and life cycle duration.

- Collect **pupae** if present.

Pupae may be brownish to blackish in color and they may be mistaken as rat, or other rodent feces. Pupae may be found under the remains or a few inches from the body. In some habitat they may be found several feet from the body. Pupae may be under rotten leaves or other debris, as well as under carpeting and in the clothing of the victim. *Pupae do not require a food source.* However, they should be placed in a paper cup or similar container. It is suggested that a paper towel(s) be placed in the cup with the pupae to help keep them from being damaged during shipment to an entomologist.

### **Insect Life Cycles**

The **life cycles** of most flies and insects consist of four specific stages:

- egg
- larva (larvae, plural)
- pupa (pupae, plural)
- adult.

A particular insect species life cycle is stable and generally varies only with the influence of temperature and availability of food sources. Each cycle is relatively consistent with regard to elapsed time. Some researchers consider forensic entomology to be the most reliable of the time of death measures, if more than 72 hours has elapsed since death. Some entomologists claim a precision of 12-24 hours in estimating time of death when environmental temperatures remain high.

### **Time Factors for the Common Blow Fly**

There is no general “rule of thumb” for estimating age of the stages of blow flies. Each species must be evaluated by its specific cycle, habits, and distribution during the seasons. In addition, prevailing temperatures are critical and must be a major consideration in the final analysis of post mortem estimates of time of death when using insects. Thus, it is critical to have the expertise of the forensic entomologist who is knowledgeable with both the species of flies and the energy units required by those species to reach different stages of the life cycle.

**Note:** Blow fly life cycles can vary among species even when the development temperatures are the same. This variability (at 80 degrees Fahrenheit) can range from:

- 10-12 days for tropical species of blow flies (southern species)
- 12-15 days for screw worm, green bottle flies, and the black blow fly (summer species)
- 18-35 days for the blue bottle flies (spring and fall species)

### **Variables Affecting Forensic Entomology**

- **Temperature.** Cool temperatures **slow** the growth cycle and hot temperatures **increase** it.
- **Weather.** Rain and humidity tend to **slow** the growth cycle. Cold weather will cease insect activity. However, maggots may still remain alive on bodies even in winter. They will be found on the ground/body interface or internally in the remains.
- **Location of body.** A body that is buried, under water, or otherwise covered may hinder the use of forensic entomology. However, the presence of water does not always rule out the presence of insects.
- **Climatic conditions.** Fly and insect activities cease, or are greatly diminished, in Indiana during the late Fall, Winter, and early Spring. Windy days can decrease or suspend flight activity of blow flies.

**Note:** See Catts and Haskell (1990) *Entomology and Death: A Procedural Guide* for more information regarding entomological analyses.

### Section 303.8

#### Analysis of Food Digestion

**Many homicides have been solved based on an examination of the contents of the victim's stomach and/or small intestine.**

#### Observations at the Autopsy

- Analysis of the food content of the stomach and small intestine is normally accomplished by the pathologist during the autopsy.

#### Time Factors in Food Digestion

While the **major** thrust of this analysis is to determine what the victim had for his/her last meal, it is also possible to estimate the deceased's time of death. The **stomach** usually empties in **two to four** hours. The **small intestine** usually empties in **ten to twelve** hours.

**Caution:** Due to a number of uncontrollable variables, this method is one of the **least reliable** for estimating time of death.

#### Variables That Affect Food Digestion

- **Stress.** Extreme stress will tend to slow the digestive processes.
- **Illness.** Illness may slow or speed up the digestive processes. Nausea may lead to vomiting, thus emptying of the stomach.
- **Amount and kind of food.** Soft foods and liquids will speed up the process. Solids (meats, corn) will slow down the process. Drinking large quantities of liquids will tend to speed up the digestive process.
- **Chewing of the food.** Well-chewed food will digest faster than slightly chewed food.
- **Presence or absence** of gastric/digestive juices.

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### Section 303.9

#### Other Factors in Assessing Time of Death Estimates

- It should also be noted that time of death can also be estimated from the cloudiness of the **cornea** of the eye. The cloudiness will appear in **12 to 24** hours. The cornea is generally completely opaque in **48 to 72** hours.
- Measuring the **potassium** level in the fluid of the eye can also be used to estimate time of death. However, many consider this method to be extremely unreliable.

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**Section 303.10**  
**References for Time of Death Estimates**

- Catts, E. Paul and Haskell, Neal H. (1990). *Entomology and Death: A Procedural Guide*. Clemson, NC: Joyce's Print Shop, Inc.
- Castellano, M. A., Villanueva, E. C. & Frenckel, R. von (1984). "Estimating the Date of Dry Bone Remains." *Journal of Forensic Science*, Volume 29 (2), April 1984:527-534.
- Moenssens, A. A., Inbau, F. E. & Starrs, J. E. (1986). *Scientific Evidence in Criminal Cases, Chapter 5*. Mineola, NY: The Foundation Press, Inc.
- Mann, R. W., Bass, W. M. & Meadows, L. (1990). "Time Since Death and Decomposition of the Human Body: Variables and Observation in Cases and Experimental Field Studies." *Journal of Forensic Sciences*, Volume 35(1), January 1990:103-111.
- Rulshrestha, P. & Chandra, H. (1987). "Time Since Death: An Entomological Study on Corpses." *American Journal of Forensic Medicine & Pathology*, Volume 8(2), 1987:233-245.
- Ullman, K. (1992). "Forensic Entomology: Aiding Investigations." *Law and Order*, November 1992:26-29.
- Underwood, A. (1989). "A new breed of crime fighter, the forensic entomologist, is helping police solve some grisly mysteries." *Science Digest*, November 1989:24-32.
- Vass, A. A., Bass, W. M., Wolt, J. D., & Ammons, J. T. (1992). "Time Since Death Determinations of Human Cadavers Using Soil Solution." *Journal of Forensic Sciences*, Volume 37 (5), September 1992:1236-1253.

## Section 304

# Establishing Cause and Manner of Death

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### Section 304.1 First Question

Was the death due to natural rather than criminal or other causes?

### Section 304.2 Investigation *Not* Required

**A criminal investigation will not *generally* be required if the death was due to natural causes or an accident.**

Three requirements that must be met to determine if an investigation **is not** necessary:

- Determine if the victim was being **treated by a doctor**.
- Determine if the doctor has **seen the victim in the past 20 days**. (Note: Coroner policies may vary as to total number of elapsed days.)
- Determine if the doctor **will sign a death certificate**.

**Caution:** In Indiana the Coroner is the senior official at a death scene. Therefore, he or she will make the final determination as to manner of death.

### Section 304.3 Six Common Methods to Identify the Deceased

- Witnesses
- Fingerprints
- Medical/Dental Records
- Anthropological Analysis
- X- Rays
- DNA Analysis

Identification of the deceased is the last of the preliminary investigative steps in a death investigation. This step can vary from the **easiest and most common** method (identification of the victim by a witness, *e.g.*, friend or family member) to the most difficult and **least common** (identification of skeletonized or badly decomposed bodies by anthropological or other methods).

Badly decomposed or skeletonized bodies often go unidentified when there is no "missing person" report or known "criminal activity" on which to base the identification attempt. Thus, it is normally helpful in the identification process to have some idea of who the deceased may be.

## § 304.3.1

## Witnesses

• **Identification by Family Member**

In most deaths, whether natural or the result of criminal activity, the victim can be identified by a witness. Out of concern and sensitivity to the loss of a loved one, it is suggested that family members be used as a last resort in identifying the deceased.

• **Friends, Co-workers and Neighbors**

Friends, acquaintances, co-workers and neighbors are normally used to identify the victim. This is quite

common due to the mobility of our society. Many victims do not have any immediate family members residing in the area or state in which their deaths occur.

**Caution:** Visual identifications can be very unreliable. There are numerous cases of traumatized friends or family members misidentifying a body. Whenever possible, it is wise to confirm identity through another method.

## § 304.3.2

**Fingerprints**

Fingerprints are also commonly used to identify deceased individuals. This is particularly true when a visual identification is impossible. The use of fingerprints to identify a victim generally requires the investigator to have some reasonably strong idea of who the victim is. Thus, the victim's prints can be compared to "known" prints. Fingerprint identification of youthful victims may be impossible as many young people (under the age of 18) have never been fingerprinted. The Automated Fingerprint Identification System (AFIS) may offer a great deal of assistance in the future; however, most localities (to include Indiana) do not have the resources to enter **all** known prints into their AFIS systems.

## § 304.3.3

**Medical and Dental Records**

Medical and dental records are also methods of identifying badly decomposed or mutilated victims. Medical records can be useful in identifying victims through information regarding prior **operations**. This allows for comparison of "known" scars and missing organs with those of the deceased.

Dental records also provide a useful method of identifying an unknown victim. It may also be possible to identify victims by using their false teeth or partial plates. Some individuals have their initials or social security numbers engraved on their false teeth.

## § 304.3.4

**Anthropological Methods**

Anthropological methods of identifying deceased victims are many and varied in nature. However, there is not a very high probability of making a **positive** identification. These methods are generally used in **John or Jane Doe** type cases. They are also useful in identifying remains from a fire, aircraft accident or similar occurrence.

Analysis of skeletal and other remains allows anthropologists to determine **age, race, and sex** of badly decomposed or skeletonized victims. Height can be estimated by measuring the bones of the trunk, legs and arms of the body. Sex can be determined from examination of the **pelvic** bones. The pelvic bones of women are shaped differently from those of men. The female pelvis is shaped to assist in the birth of children. Age can be estimated by analyzing bone growth and development. These will be **general** estimates as bone and joint development is different between infants, children, adolescents, and adults.

Analyses of **skin, hair, and eyes** can provide **racial** characteristics. Some anthropologists can also recreate **facial** features if the skull is recovered. Further, some **experts** can also provide the **sex, age, and possibly the race** of the victim. Anthropologists can also detect bone diseases and natural versus unnatural breaks of

the bones. Each of these could be useful in establishing a positive identification of a victim. It should also be noted that anthropologists are extremely useful in determining whether bones are human or animal in origin. Determining the latter can save a lot of valuable investigative hours.

#### § 304.3.5

##### **X-Rays**

X-rays can be extremely useful in identifying a victim, as well as in determining the cause of death. This is particularly true if the latter was due to some form of violent activity; *e.g.*, death due to gunshot or stabbing. X-rays of the victim's body and teeth may reveal **known** traumas to the victim. For example:

- X-rays may reveal bullet or stab wounds.
- X-rays may reveal known fractures or bone deformities.
- X-rays may reveal metal fragments from a bullet or knife, or similar object.
- X-rays may reveal indications of child abuse in youthful victims. This is most evident when there are signs of broken bones that were not treated. It may also be possible to detect signs of spouse or elderly abuse as well.

X-rays may lead to a positive identification in and of themselves. However when this is not possible, they may provide investigative clues that will lead to a positive identification and the successful resolution of a criminal case.

#### § 304.3.6

##### **DNA Analysis**

DNA analysis is another method by which identification can be ascertained. Deoxyribonucleic acid [DNA] contains genetic information about the human body. DNA has been used for years in establishing the paternity of children. In the past decade or so, DNA has been used to establish the identity of murderers and rapists. More recently it has been used to free individuals erroneously convicted of rape. DNA analysis can be made from human tissue and blood. The specificity of DNA analysis is dependent on the reputation of the laboratory and analyst conducting the analysis.

DNA testing to identify a deceased person can be accomplished through analysis of blood and/or tissue. The preferred method is to compare blood/tissue from the deceased with known specimens belonging to the deceased. However, identification is also possible by comparing the deceased's DNA to that of living family members; *e.g.*, children or parents. In theory, these individuals should share some of the same genetic markers.

**Note:** For more specific information on DNA analysis for identification purposes contact your regional Indiana State Police Laboratory. The Indiana State Police Laboratories have the capability to conduct DNA analyses.

**Note:** For more specific information concerning the definition of DNA, DNA analysis procedures, and case studies involving DNA it is suggested you read: Richard Saferstein, Ph.D. (2001) *Criminalistics: An Introduction to Forensic Science*, Sixth Edition, Englewood Cliffs, NJ: Prentice-Hall. Saferstein was quoted repeatedly by both the prosecution and defense attorneys during the O.J. Simpson trial in 1994-1995.

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### Section 304.4

#### **Summing up Identifications**

Generally the only accepted methods of **positively** identifying a dead person are by witness identification, the use of fingerprints, and the use of medical and dental records. DNA analysis is also gaining in popularity, especially when dealing with decomposed bodies. Often the use of x-rays and anthropological methods are best used as investigative tools for establishing a **possible** identity of a victim.

**Caution:** It should also be noted that there is some overlapping of investigative techniques. For example, the

pathologist may provide some of the information used in establishing victim identity during the autopsy to determine cause and manner of death.

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### **Section 304.5** **Autoerotic Death**

An accidental death that occurs when an individual engages in a sexual act where he/she tries to achieve orgasm at the precise moment that oxygen is temporarily cut off from the brain. The victim is generally involved in some form of solo sexual activity (such as masturbation) at the time of death.

Autoerotic deaths are accidental deaths that result from strangulation or hanging. The death occurs while the victim is engaging in a sexual act that includes an attempt to achieve sexual orgasm at the precise moment that oxygen is temporarily cut off to the brain. The victim is generally engaged in some form of masturbation.

This is normally accomplished by the victim rigging some type of hanging or strangulation device that allows for his/her quick escape from the device. When the victim is unable to escape due to passing out from lack of oxygen to the brain, or a failure in the release system, he or she dies of asphyxiation. The scene may be misinterpreted as a suicide, or in extremely rare cases a homicide. While the exact number of autoerotic deaths that occur in the United States each year is unknown, it is believed there may be a thousand (1000) or more.

The difficulty in establishing an exact figure is the fact that many of these deaths are ruled a suicide by coroners and law enforcement officers who are untrained in the elements involved in this type of death. Generally, the victim is a male; however, there have been a number of autoerotic deaths involving female victims.

#### **§ 304.5.1**

##### **Summary of Autoerotic Death Characteristics**

1. Autoerotic deaths are accidental deaths.
2. Death occurs as a result of asphyxiation.
  
3. Victim is generally engaged in masturbatory act.
4. Death results from hanging or strangulation.
5. Victim is generally a male.
6. Death is often incorrectly ruled a suicide.

There are some **common** characteristics associated with an autoerotic death scene. Knowing these characteristics can help an astute investigator rule out a suicide.

#### **§ 304.5.2**

##### **Characteristics of an Autoerotic Death Scene**

1. Victim is found hanging or strangled.
2. Victim could have escaped from his/her bonds.
3. Victim is nude or partially nude.
4. There may be semen or vaginal secretions present.
5. There may be pornographic or sexually explicit material present.
6. There is generally a protective "cushion" between the hanging/strangulation device and the victim's neck.
7. There may be previous autoerotic activities, such as "wear" spots on any support device. For example, wooden or metal bars or beams.
8. There may be signs of ritualism.

Autoerotic deaths generally occur as a result of **hanging** or **strangulation**. The hanging or strangulation device is generally placed around the victim's neck. The devices can range from simple to rather complex hanging devices or techniques. However, some victims rig strangling devices that also serve to cut off the flow of oxygen to the brain. **Note: There has been at least one case of an autoerotic death from a device around the**

**abdomen.**

A **key** establishing an autoerotic death is the **escape mechanism** or **that escape** was possible. This may range from some type of pulley system, or be as simple as very loose ligatures around the victim's hand and/or feet.

**Nudity** of some form is generally present. The victim may be **totally** or **partially** nude. There may also be signs of **cross-dressing** or **fetishism**.

The victim's body, clothing (if any), bedclothes, carpets, or similar item may contain the presence of **semen** or **vaginal secretions**. **Note:** If the victim's family or friends found the body, they may have washed, or wiped, off the victim's body. However, if a male victim did not experience post-death urination there may be the presence of semen in the urethra.

There may be **pornographic** or **sexually explicit** material or books present at the scene. The investigator should also be observant of any mirrors or other type of reflecting device that the victim could have observed him/herself in. Vibrators, or dildos, may be present where the victim is a female.

There is generally some form of "**protective cushion**" placed between the victim's neck and the ligature. This can be a bath towel or similar item. The purpose of this "**cushion**" is to protect the victim's neck from abrasions or bruising as a result of the ligature around the neck.

In many autoerotic deaths, the investigators have found signs of previous autoerotic activities. A major sign is "**tracks**" or "**indentations**" worn into support bars or beams. This is particularly true of wooden closet bars or support beams in the rafters of basements, attics or outbuildings.

In many cases there may be indications of a ritual activity on the part of the victim. This may be indicated from the display of sexually explicit material, cross-dressing, or the arrangement of mirrors or cameras.

**Note:** In interviewing witnesses or family members the investigator should ask if the victim has expressed an interest in autoerotic activities. The investigator should also check diaries and other material for indications of an interest or previous involvement in autoerotic activities.

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**§ 304.5.3****Resources on Autoerotic Deaths**

Garza-Leal, J. A., Landron, F. J. (1991). "Autoerotic Asphyxial Death Initially Misinterpreted as Suicide and a Review of the Literature." *Journal of Forensic Sciences*, Volume 36 (6), November 1991:1753-1759.

Geberth, V. J. (1989). "Sexual Asphyxia The Phenomenon of Autoerotic Fatalities." *Law and Order*, Volume 37 (8), August 1989:79-85.

Hazelwood, R. R., Dietz, P. E. & Burgess, A. W. (1983). *Autoerotic Fatalities*, Lexington, MA: Lexington Books.

Thibault, R., Spencer, J. D., Bishop, J. W. & Hibler, N. S. (1984). "An Unusual Autoerotic Death: Asphyxia with an Abdominal Ligature." *Journal of Forensic Sciences*, Volume 29 (2), April 1984:679-684.

Sass, F. A. (1975). "Sexual Asphyxia in the Female." *Journal of Forensic Sciences*, Volume 20 (1), January 1975:181-185.

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**Section 304.6**

### **Munchausen Syndrome Death**

A suicide in which the victim "rigs" or "stages" the death to appear as a homicide. Munchausen Syndrome Deaths are rarities in death investigations. This is due in part to the limited knowledge of coroners and law enforcement personnel about this type of violent death. It is rarely taught at police or investigative schools because of the rarity of its detection.

However, it may be more common than we think, simply because of this lack of knowledge on the part of law enforcement officers and coroners. For example, the "scene" is so well staged that an unsuspecting investigator would believe it to be a homicide. To detect a Munchausen Syndrome Death, the investigator must go beyond the "crime scene" and make inquiries into the psychological and medical background of the victim.

Unfortunately, the need for this type of investigation may not be readily recognized by the investigator(s). A possible indicator would be when the investigator is unable to develop a logical motive for a homicide. If there is no motive for a homicide, the investigator could benefit from exploring the Munchausen Syndrome phenomenon.

#### **§ 304.6.1**

##### **Summary of Munchausen Syndrome Death Characteristics**

1. Munchausen Syndrome Deaths are suicides.
2. There is limited knowledge of this phenomenon.
3. The death is a "staged" homicide.
4. The failure to develop a motive may be an indicator of a Munchausen Syndrome Death.
5. An investigation of the "victim's" medical and/or psychological treatment may indicate a Munchausen Syndrome Death.

**Note:** Due to the rarity of this type of death investigation, it is suggested that interested coroners read, "Suicide Disguised as Murder: A Dimension of Munchausen Syndrome" by Charles P. McDowell in the *Journal of Forensic Sciences*, Vol. 32, January, 1987, pp. 254-261.

#### **§ 304.6.2**

##### **Investigative Steps for Suspected Munchausen Syndrome Deaths**

1. Interview family, co-workers and friends.
2. Interview Medical Personnel (Doctors/Psychologists).
3. Trace the owner of the murder weapon and any other weapon(s) found at the crime scene.
4. Search victim's residence for extensive medical records and/or medications pertaining to the victim.

Investigators commonly interview family, co-workers and friends of a real or suspected homicide victim. However, in a suspected Munchausen Syndrome Death, the investigator must expand the interview area. The interview should be expanded to cover the victim's medical, and employment history. The investigator should be observant for the following indicators of a Munchausen Syndrome Death:

- Extensive medical treatment (This treatment may be for real or imagined illnesses. However, indications of hypochondria would be significant in this type of investigation.) [*Hypochondria: The term used to describe the condition of a person who suffers from imagined illnesses. May also describe a person's depression or anxiety that occurs from continuous and unnecessary worry over his/her health.*]
- Unstable employment history (This is usually reflected in the victim's having numerous jobs or changing his/her place of residence an excessive number of times.)
- Decedent is often known for his/her tendency to prefabricate (lie) when discussing his/her activities or "illnesses."

Investigators should interview medical personnel who treated victim. They should also attempt to review the victim's medical or psychiatric records. During these interviews/reviews the investigator should be cognizant

of the following:

- Medical interviews/records (These should be conducted with the intent to uncover an extensive history of imagined illnesses. The doctor's evaluation of the victim's hypochondria would be extremely significant.)
- Psychological/psychiatric interviews/records (These should be conducted with the intent to uncover a history of fantasy on the part of the victim. In particular fantasies pertaining to the victim's heroism, being threatened, or expressed fear of being the victim of a violent death.

Investigators must expand their normal attempts to "trace" the apparent murder weapon to include other weapons that may be at the scene. Also, the apparent absence of a murder weapon does not rule out the possibility of a Munchausen Syndrome Death. The weapon(s) found at the crime scene may belong to the victim or an acquaintance of the victim.

A search of the victim's residence is required. This is true even if the residence is not the location of the crime scene. The investigator is looking for an extensive number of medical records and/or an extensive amount of medications prescribed for the victim. The investigator should also be observant for an extensive collection of medical pamphlets, books and materials. A Munchausen Syndrome victim often has a broad knowledge of medicine and medical diseases.

#### § 304.6.3

##### **Resources on Munchausen Syndrome Deaths**

Asher, A. (1951). "Munchausen's Syndrome." *The Lancet*, Volume 1, January 1951: 339-341.

McDowell, C. P. (1987). "Suicide Disguised as Murder: A Dimension of Munchausen Syndrome." *Journal of Forensic Sciences*, Volume 31 (1), January 1987: 254-261.

## Section 305

# Evidence Collection

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### Section 305.1

#### Investigating Homicides

**Note:** Any unknown cause of death should be investigated as a homicide. The investigation can be stopped at any point where a homicide can be legally ruled out (for example, accidents, suicides or normal deaths).

**General Considerations:** Generally, the investigator should be concerned with the following key elements of an unknown death or homicide:

#### Key Elements

- Establish **Cause of Death**
- Establish **Manner of Death**
- Collect **Evidence Related to Offender**
- Collect **Evidence Related to Victim**

### Section 305.2

#### Cause of Death

Establishing the **cause of death** is paramount in an actual, or suspected, homicide. The establishment of the appropriate cause of death will lead the investigator into the collection and preservation of relevant physical evidence, such as the recovery of the instrument of death: *e.g.*, firearm or knife. The experience and expertise of a pathologist is **generally** essential in making this determination.

**Note:** Establishing the cause of death is not always easy, even for experienced coroners and forensic pathologists. For example, skeletonized and badly decomposed bodies often thwart the efforts of the most experienced coroner or pathologist.

### Section 305.3

#### Manner of Death

The establishment of the manner of death may end the criminal investigation. This is especially true in cases involving suicide or accident. The experience and expertise of the individual coroner will be important in

making this determination.

**Note:** Establishing the manner of death is not always easy, even for experienced coroners and forensic pathologists. For example, an auto-erotic death (accidental death) may appear to be a suicide to the inexperienced coroner or investigator.

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#### **Section 305.4 Evidence from Offender**

In nearly all homicide cases the offender will bring to, or take from, the scene some type or form of physical evidence. The obvious evidence would be the instrument(s) of death (firearms or knives, for example). Other less obvious evidence could include tobacco products, hairs, and fibers from clothing, foot and fingerprints.

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#### **Section 305.5 Evidence from Victim**

Pertinent physical evidence may be found on the victim, or the victim may have brought it to the scene. Investigators should look for hairs and fibers from the offender. In cases of gunshot deaths, the investigator may find bullets and/or gunshot residue on or in the body of the victim. In drug related homicides, the victim may have brought drugs or money to the scene. In some cases, the victim may have brought the weapon that was used to kill him/her.

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#### **Section 305.6 Search Warrant**

Homicides must be investigated with the utmost care. Whether or not a search warrant is required depends on the circumstances of each individual case. Generally, search warrants are not required in open (public) areas. If the scene is in a closed (private) area, the circumstances of the case, the presence of law enforcement personnel and the **limits** of the search, would dictate whether or not a warrant was necessary. **When in doubt, obtain a warrant.**

---

#### **Section 305.7 Physical Evidence of Homicide**

The following is a partial list of items that may be found during a homicide scene search:

- |                                    |                   |                            |
|------------------------------------|-------------------|----------------------------|
| · Fingerprints                     | · Blood           | · Blunt instruments        |
| · Firearms                         | · Cartridge cases | · Saliva                   |
| · Knives<br>(stabbing instruments) | · Footprints      | · Semen stains             |
| · Hairs                            | · Tire prints     | · Cigars/cigarettes        |
| · Fibers                           | · Gunshot residue | · Drugs/Drug paraphernalia |
|                                    | · Bullets         |                            |

Steps to take in the collection and preservation of evidence are covered in Section 305.8. This section is alphabetized for easy access.

**Caution:** The investigator should **air dry** all articles of clothing or other fabrics that contain blood, seminal fluid, urine, perspiration or other body fluids or stains. The articles should be air dried out of direct sunlight.

No artificial heating/drying device should be used, as heat will destroy many of the evidentiary properties of the above fluids. This rule also applies to any cigar/cigarette butts that may be collected as evidence.

**Note:** The above items of evidence are not meant to be **all-inclusive**. They are items that are commonly found at this type of crime scene. However, the investigator **should always be observant for other items of evidence**. The **effectiveness** of a crime scene search is generally dictated by the **expertise and ingenuity** of the individual(s) conducting the search.

**Note:** Many of the above items will also be found at the site of an accidental death or suicide.

**Section 305.8**

**Evidence Collection and Preservation Techniques with Laboratory Analysis**

- It is recommended that all evidence that is to be collected be **photographed** prior to collection. The photographs will show the location, shape, and condition of the evidence prior to its being collected.
- Package each item of evidence that is collected into its own **separate** container. (This is to avoid contamination or cross-transfer of evidence.)
- Mark each item of evidence, or its container, with the investigator's initials and the date. **A completed chain of custody receipt should also be attached to the item or container.**
- It is recommended that investigators **wear protective gloves**. This serves two functions: it offers some protection from disease or infection; and it protects against contamination of the evidence by preventing contact of the investigator's hands with the evidence.

**Note:** Contact IOSHA for information concerning standards, equipment, and training requirements for compliance with Universal Precautions Standards and Bloodborne Pathogens Standards.

§ 305.8.1 Accelerant	
Collection/preservation technique	Information from laboratory analysis
<ul style="list-style-type: none"> <li>· Place one or two ounces of the liquid or fluid into a sealed, <b>airtight</b> glass or unlined metal container. Containers <b>must be unlined</b>.</li> <li>· Common accelerants are kerosene and gasoline.</li> <li>· Complete chain of custody receipts.</li> </ul> <p><b>Note:</b> Collect and seal any metal or glass containers that are suspected to contain an accelerant. Be sure seal is <b>airtight</b> to prevent the possible evaporation of accelerants.</p> <p><b>Caution:</b> Never use plastic containers.</p>	<ul style="list-style-type: none"> <li>- Type of accelerant (gas or kerosene) (Cannot tell brand name)</li> <li>- If petroleum based product</li> <li>- If special gas: <i>e.g.</i>, aviation</li> <li>- If a solvent, may tell specific type; <i>e.g.</i>, marine</li> </ul>

§ 305.8.2 Arson Debris	
Collection/preservation technique	Information from laboratory analysis
<ul style="list-style-type: none"> <li>· Place one to two quarts of debris from <b>each suspected point of origin</b> into a sealed, <b>airtight</b> container. Metal cans or glass jars may be used.</li> <li>· Place any absorbent materials; wood, fabric, cloth, or plastic seat cushions into a sealed, <b>airtight</b> metal or glass container.</li> <li>· Collect <b>control samples</b> and place them into sealed, airtight</li> </ul>	<ul style="list-style-type: none"> <li>- If accelerant was used</li> <li>- Type of accelerant</li> <li>- If petroleum based product.</li> <li>- Help to determine if it was arson or not.</li> </ul>

metal or glass containers. · Complete chain of custody receipts.  <b>Caution:</b> Never use plastic containers.	
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§ 305.8.3 Body Fluids (Blood)

Collection/preservation technique	Information from laboratory analysis
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<p><b>Blood (pooled)</b></p> <ul style="list-style-type: none"> <li>· Use a clean eyedropper and draw blood into the dropper. Placed the eyedropper containing the blood into a sealed container.</li> <li>· Collect 5 to 10 cc of blood, if possible</li> <li>· Keep the blood refrigerated.</li> <li>· Do not add any substances to the blood.</li> <li>· Check with laboratory as to use and/or type of preservative.</li> <li>· Complete chain of custody receipts.</li> </ul> <p><b>Blood (stains)</b></p> <ul style="list-style-type: none"> <li>· Collect item containing the blood stain.</li> <li>· Air-dry out of direct sunlight or heat. Place item on a piece of clean paper while drying.</li> <li>· Place each item in a separate paper bag or wrap it in butcher paper.</li> <li>· If folding item protect the stain with a clean piece of paper.</li> <li>· Complete chain of custody receipts.</li> </ul> <p><b>Note:</b> Blood stains on floors or other immovable surfaces may be obtained by using a "Q" tip or cotton ball dampened with distilled water. Swab or blot the stained area. Blood will be absorbed into the cotton. <b>Air dry</b>, and handle as above.</p> <p><b>Note:</b> Dried blood stains may also be collected by scraping with a razor blade or knife. Handle as above. Do not seal blood stained items in airtight containers.</p> <p><b>Note:</b> Generally the collection of body fluids as evidence requires the collection of comparison standards from the victim and/or suspect. If circumstances indicate, this may also be required of others, such as victim's spouse or lover.</p> <p><b>Note:</b> Blood standards should be obtained by qualified medical personnel in accordance with approved medical procedures.</p> <p><b>Caution:</b> When obtaining body fluid standards from a suspect the individual's attorney should be notified.</p>	<ul style="list-style-type: none"> <li>- Blood type</li> <li>- If blood type same as suspect's type</li> <li>- Using DNA, can individualize blood to one person</li> <li>- If drugs or alcohol were used</li> <li>- Type of drug used</li> <li>- Whether blood was the same type as the suspect's or that of someone else</li> </ul>
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§ 305.8.4 Body Fluids (Perspiration Stains)

Collection/preservation technique	Information from laboratory analysis
<ul style="list-style-type: none"> <li>· <b>Air dry</b> any clothing/fabric containing stains. Place item on piece of clean paper while drying.</li> <li>· Place each item in a separate paper bag or in butcher paper and seal.</li> <li>· If folding item protect the stain with a clean piece of paper.</li> <li>· Complete chain of custody receipt.</li> </ul> <p><b>Note:</b> Generally the collection of body fluids as evidence requires the collection of comparison standards from the victim and/or suspect. If circumstances indicate, this may also be required of others, such as victim's spouse or lover.</p> <p><b>Caution:</b> When obtaining body fluid standards from a suspect the individual's attorney should be notified.</p>	<ul style="list-style-type: none"> <li>- DNA</li> <li>- If person was a secretor</li> <li>- Blood type if a secretor</li> </ul>

§ 305.8.5 Body Fluids (Saliva Stains)

Collection/preservation technique	Information from laboratory analysis
<ul style="list-style-type: none"> <li>· <b>Air-dry</b> any clothing/fabric containing stains. Place item on piece of clean paper while drying.</li> <li>· Place each item in a separate paper bag or in butcher paper and seal.</li> <li>· If folding item protect the stain with a clean piece of paper.</li> <li>· Complete chain of custody receipt.</li> </ul> <p><b>Note:</b> Generally the collection of body fluids as evidence requires the collection of comparison standards from the victim and/or suspect. If circumstances indicate, this may also be required of others, such as victim's spouse or lover.</p> <p><b>Caution:</b> When obtaining body fluid standards from a suspect the individual's attorney should be notified.</p> <p>Saliva standards may be obtained by the investigator:</p> <ul style="list-style-type: none"> <li>· The person obtaining the standard should wear disposable gloves.</li> <li>· Have individual empty his/her mouth for about 30 minutes prior to providing the standard. The individual should not be allowed to eat, smoke, or drink during this period.</li> <li>· Have individual saturate a clean paper towel or filter paper.</li> <li>· <b>Air-dry</b> the standards out of direct sunlight. Place the saturated paper on a clean piece of paper while drying.</li> </ul> <ul style="list-style-type: none"> <li>· Saliva standard should be submitted to the laboratory along with approximately 5cc of whole blood. (Check with your laboratory to be sure.)</li> <li>· <b>Avoid</b> touching the specimen standards at all times. Use tweezers or similar device when it is necessary to handle standards.</li> </ul>	<ul style="list-style-type: none"> <li>- If person was a secretor</li> <li>- Blood type if a secretor</li> <li>- <b>Note:</b> May be possible to conduct DNA analysis for positive identification (Check with laboratory personnel.)</li> </ul>

§ 305.8.6 Body Fluids (Semen/Vaginal Fluids Stains)	
Collection/preservation technique	Information from laboratory analysis
<ul style="list-style-type: none"> <li>· <b>Air-dry</b> any clothing/fabric containing stains. Place item on piece of clean paper while drying.</li> <li>· Place each item in a separate paper bag or in butcher paper and seal.</li> <li>· If folding item protect the stain with a clean piece of paper.</li> <li>· Complete chain of custody receipt.</li> </ul> <p><b>Note:</b> Generally the collection of body fluids as evidence requires the collection of comparison standards from the victim and/or suspect. If circumstances indicate, this may also be required of others, such as victim's spouse or lover.</p> <p><b>Note:</b> Semen and vaginal fluids standards should be obtained by qualified medical personnel in accordance with approved medical procedures.</p> <p><b>Caution:</b> When obtaining body fluid standards from a suspect the individual's attorney should be notified.</p>	<ul style="list-style-type: none"> <li>- If person was a secretor</li> <li>- Blood type if a secretor</li> <li>- May be possible to conduct DNA analysis for positive identification (Check with laboratory personnel)</li> </ul>

§ 305.8.7 Body Fluids (Urine Stains)	
Collection/preservation technique	Information from laboratory analysis
<ul style="list-style-type: none"> <li>· <b>Air-dry</b> any clothing/fabric containing stains. Place item on piece of clean paper while drying.</li> <li>· Place each item in a separate paper bag or in butcher paper and seal.</li> <li>· If folding item protect the stain with a clean piece of paper.</li> <li>· Complete chain of custody receipt.</li> </ul> <p><b>Note:</b> Generally the collection of body fluids as evidence requires the collection of comparison standards from the victim and/or suspect. If circumstances indicate, this may also be required of others, such as victim's spouse or lover.</p> <p><b>Note:</b> Urine standards should be obtained by qualified medical personnel in accordance with approved medical procedures.</p> <p><b>Caution:</b> When obtaining body fluid standards from a suspect the individual's attorney should be notified.</p>	<ul style="list-style-type: none"> <li>- If person was a secretor</li> <li>- Blood type if a secretor</li> </ul>

§ 305.8.8 Blunt Objects	
Collection/preservation technique	Information from laboratory analysis
<ul style="list-style-type: none"> <li>· Collect clubs, bats and other blunt instruments.</li> <li>· All items containing blood or other fluids should be <b>air dried</b>, out of direct sunlight or heat.</li> </ul> <p><b>See note above on handling and collecting blood stains.</b></p>	<ul style="list-style-type: none"> <li>- Fingerprints (depending on surface type)</li> <li>- If blood, fibers or hairs on object may be able to connect to victim, suspect or crime scene</li> </ul>

<ul style="list-style-type: none"> <li>· Place each item in a separate paper bag or wrap in butcher paper.</li> <li>· Complete chain of custody receipts</li> </ul>	
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### § 305.8.9 Bones

Collection/preservation technique	Information from laboratory analysis
<ul style="list-style-type: none"> <li>· Skeletal remains are best collected and/or excavated by an anthropologist.</li> <li>· Record and observe the original position of the body.</li> <li>· Insure that all small bones and bone fragments are retrieved.</li> </ul> <p>Loose bones should be packed in paper sacks or boxes.</p> <ul style="list-style-type: none"> <li>· Bones with decomposed soft tissue attached should be placed in a zippered body/disaster bag.</li> </ul> <p><b>Caution:</b> Do not place bones in plastic bags or containers. Do not excavate at night as bones may be lost or overlooked. Time is not of the essence in these cases. If remains are found at night, secure the scene until morning.</p> <p><b>Note:</b> Extend your search well beyond the area where the body is found if skeletal remains are found in a wooded or open area. Carnivoric activity can result in a wide dispersal of bones and bone fragments.</p> <p><b>Note:</b> If skeletal remains are found on a hilltop or sloping area you should extend your search to the bottom of the slope and/or around the bottom of the hill. Bones, particularly the skull, can roll down an incline. Carnivoric activity can also cause this bone movement.</p> <p><b>Note:</b> A forensic pathologist should be consulted if the skeletal remains are found to be human.</p>	<ul style="list-style-type: none"> <li>- If animal or human remains</li> <li>- Height of victim</li> <li>- Possibly race of victim-</li> <li>- Sex and Age of victim</li> <li>- May obtain time of death estimate</li> <li>- May be able to perform craniofacial recon-struction to help in identification of victim</li> <li>- Identify ante- and post-mortem trauma to bones, <i>e.g.</i>, knife and bullet wounds</li> <li>- Identify victim through comparison of injuries or trauma to bones with those found in medical/dental records</li> </ul>

### § 305.8.10 Bullets

Collection/preservation technique	Information from laboratory analysis
<p><b>Bullets (spent)</b></p> <ul style="list-style-type: none"> <li>· Collect spent bullets by using “glove protected” fingers or some sort of soft “lifting device.”</li> <li>· Place each bullet into a separate container. Wrap in cotton and place in sturdy container such as a pillbox.</li> <li>· Avoid marking the bullet surface.</li> <li>· <b>Do not</b> scratch or mark the sides of the bullet. If removing a bullet from an object, <i>e.g.</i>, wall, do not touch the bullet. Cut around the object and send the object/matter containing the bullet to the lab.</li> <li>· Complete chain of custody receipts.</li> </ul> <p><b>Bullets (unspent)</b></p> <ul style="list-style-type: none"> <li>· Collect unspent bullets by grasping the cartridge case at the base. (Avoid touching the sides of the cartridge case. They</li> </ul>	<p><b>Spent</b></p> <ul style="list-style-type: none"> <li>- If weapon available, may be able to make comparison of striations on the seized bullet to bullets fired from the weapon</li> <li>- Possibly tell caliber, type of ammunition, brand, and manufacturer</li> </ul> <p><b>Unspent</b></p> <ul style="list-style-type: none"> <li>- Partial or full fingerprint</li> <li>- If misfire occurred</li> </ul>

<p>may contain fingerprints.)</p> <ul style="list-style-type: none"> <li>· Wrap each unspent bullet in cotton and package in a separate container.</li> <li>· If unspent bullets are in a revolver, the chamber location of spent and unspent bullets should be noted. (Handle as above, so as not to damage possible latent fingerprints.)</li> <li>· Unspent bullets in a clip should be left in the clip. Send the clip and bullets to the laboratory for fingerprint processing.</li> <li>· Complete chain of custody receipts.</li> </ul>	
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§ 305.8.11 Cartridge Cases	
Collection/preservation technique	Information from laboratory analysis
<ul style="list-style-type: none"> <li>· Spent cartridge cases should be wrapped in cotton and placed in individual containers such as pill boxes.</li> <li>· If marked, the date and initials of the investigator should be etched on the inside of the case.</li> <li>· Complete chain of custody receipts.</li> </ul>	<ul style="list-style-type: none"> <li>- Fingerprints</li> <li>- Based on striations, marks from firing pin, and ejector rod markings may be able to link to suspect weapon</li> <li>- Caliber and manufacturer</li> </ul>

§ 305.8.12 Cigar/Cigarette Butts	
Collection/preservation technique	Information from laboratory analysis
<ul style="list-style-type: none"> <li>· Collect each suspect cigarette or cigar butt and <b>air dry</b>. <b>Do not</b> package in airtight container. The butts may contain saliva that can be analyzed for blood type and/or DNA analysis. <b>Do not touch with your bare hand</b> if you might be submitting for DNA analysis.</li> <li>· Package each butt in its own separate envelope or other paper container.</li> <li>· Cigarette and cigar packages/boxes should be processed for latent fingerprints.</li> <li>· Complete chain of custody receipts.</li> </ul>	<ul style="list-style-type: none"> <li>- DNA</li> <li>- Blood type if user a secretor</li> <li>- May link brand to that used by suspect</li> </ul>

§ 305.8.13 Clothing/Fabrics/Fibers	
Collection/preservation technique	Information from laboratory analysis
<ul style="list-style-type: none"> <li>· Items of clothing should be packaged separately in paper bags or butcher paper.</li> <li>· Clothing items that are damp from water, body fluids or other liquid should be <b>air dried</b> out of direct sunlight or heat.</li> <li>· All items of a violent crime victim's clothing should be seized as evidence.</li> <li>· If an offender in a violent crime is arrested at the scene, all items of clothing should be seized as evidence.</li> <li>· Sheets, blankets and similar items should be marked as to which end is top or bottom. Articles containing blood and/or other body fluids or liquids should be <b>air-dried</b> out of direct heat or sunlight.</li> <li>· Large items of clothing or fabric should be folded so as to protect any torn edges and to protect any <b>trace</b> evidence that may have adhered to it.</li> <li>· Fabric items that cannot be removed, and fibers, <i>e.g.</i>, sofa or couch covers, vehicle seat covers, wall-to-wall carpets should</li> </ul>	<ul style="list-style-type: none"> <li>- If body fluids are present may develop DNA or blood type if a secretor</li> <li>- Detect presence and type of body fluid</li> <li>- Detect other substances</li> <li>- If fragment or fiber may be able to link to garment/fabric of origin</li> <li>- If fiber can tell type of fiber and possibly note origin</li> <li>- Large objects: can tell color, pattern, size and possibly manufacturer</li> <li>- If stains are present, may be able to classify stain and</li> </ul>

<p>be carefully vacuumed. Use a clean vacuum bag and send the bag and its contents to the laboratory. (Hairs, fibers and other trace evidence may be recovered.)</p> <ul style="list-style-type: none"> <li>· Package large items such as chairs and mattresses intact.</li> <li>· Collect small fibers/fragments of fabric by using tweezers or similar device. Damp items should be <b>air dried</b>, as above.</li> <li>· Individual fibers should be collected by using tweezers or a similar device. Package in small vials or pillboxes.</li> <li>· Complete chain of custody receipts.</li> </ul>	<p>origin</p> <ul style="list-style-type: none"> <li>- If stains from body fluids are present can determine type of stain, and possibly blood type if secretor</li> </ul>
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§ 305.8.14 Drugs

Collection/preservation technique	Information from laboratory analysis
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<p><b>Pills/Capsules</b></p> <ul style="list-style-type: none"> <li>· Package in small plastic or glass vials or pillboxes. (Sort based on size, color or shape.)</li> </ul> <p><b>Vegetable/Plant Matter</b></p> <ul style="list-style-type: none"> <li>· Package in envelope, pillbox, vial or similar container. (If fresh cut or harvested allow to <b>air-dry</b> first.)</li> </ul> <p><b>Liquids</b></p> <ul style="list-style-type: none"> <li>· Collect as much as possible of specimen.</li> <li>· Package in sealed, airtight container.</li> <li>· If liquid is in a syringe or needle, pull the plunger up 1/4 to 1/2 inch and tape in that position. The needle tip should be placed in its protective cover or place the point in a piece of rubber or cork.</li> </ul> <p><b>Note:</b> Pulling the plunger up and taping it will help keep the liquid in the syringe.)</p> <p><b>Powders/Solids/Paraphernalia</b></p> <ul style="list-style-type: none"> <li>· Package in glass or plastic vials and seal. <b>Do not use envelopes.</b></li> <li>· Paraphernalia such as pipes and "roach" clips may be placed in small boxes or plastic bags. (Residues may be tested for controlled substances.)</li> </ul> <p><b>Caution:</b> When handling needles or syringes, you should wear gloves. You need to protect yourself from AIDS or other infectious diseases.</p> <ul style="list-style-type: none"> <li>· Control samples should be collected on all known substances, regardless of the type of substance.</li> <li>· Complete chain of custody receipts.</li> </ul>	<p><b>Pills/Capsules</b></p> <ul style="list-style-type: none"> <li>- Tell chemicals used</li> <li>- May be able to obtain brand name</li> <li>- Tell if a controlled substance</li> </ul> <p><b>Plant Matter</b></p> <ul style="list-style-type: none"> <li>- Identify type and species</li> <li>- Tell if it is a controlled substance</li> </ul> <p><b>Liquids</b></p> <ul style="list-style-type: none"> <li>- Tell chemicals used</li> <li>- Tell if it is a controlled substance</li> </ul> <p><b>Powders</b></p> <ul style="list-style-type: none"> <li>- Tell chemicals used</li> <li>- Tell if it is a controlled substance</li> </ul> <p><b>Paraphernalia</b></p> <ul style="list-style-type: none"> <li>- If residue present, tell if controlled substance</li> </ul>
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§ 305.8.15 Fingerprints

Collection/preservation technique	Information from laboratory analysis
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· All absorbent materials such as paper should be collected and	- Compare latent or
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<p>sent to the laboratory for developing. (Package in a protective cover constructed of <b>paper</b>.) <b>Do not handle materials with your fingers.</b></p> <ul style="list-style-type: none"> <li>· All hard surfaced areas should be dusted for latent or visible prints.</li> </ul> <p style="padding-left: 40px;"><b>Note:</b> All latent prints should be photographed on a one-to-one scale before attempting to lift them.)</p> <ul style="list-style-type: none"> <li>· Lift prints using "lifting tape" and place the tape on a card that has a contrasting color from that of the powder used to lift the print.</li> <li>· Prints found in surfaces that will retain the print, such as soap or putty should be collected as they are found. The "print" can be protected with a piece of stiff cardboard or similar device. Care must be taken to avoid touching the print.</li> <li>· Collect "known" fingerprints from all suspects or individuals who may have touched the items or objects.</li> <li>· Complete chain of custody receipts.</li> </ul>	<p>questioned fingerprint(s) with known fingerprints from suspect(s)</p> <ul style="list-style-type: none"> <li>- Positively identify a suspect if a comparison is made</li> </ul>
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§ 305.8.16 Firearms	
Collection/preservation technique	Information from laboratory analysis
<p><b>Safety</b> is of the utmost importance when handling firearms and explosives.</p> <ul style="list-style-type: none"> <li>· Check and record the position of the safety on all firearms seized as evidence.</li> <li>· Unload all loaded firearms.</li> <li>· When unloading a revolver, note the position of all spent and unspent bullets as they relate to the firing chamber.</li> <li>· Attempts should be made to obtain fingerprints from the external areas of all handguns and long guns (shotguns, rifles, <i>etc.</i>), as well as clips.</li> <li>· If a firearm is recovered from the water, it should be packaged in a container that is large enough to contain the weapon submerged in the water it was found in. (This helps to retard rusting.)</li> <li>· Complete chain of custody receipts.</li> </ul> <p style="padding-left: 40px;"><b>Caution:</b> Do not send live ammunition or explosives through the postal service.</p> <p style="padding-left: 40px;"><b>Caution:</b> Do not place any foreign object in a gun barrel – this may preclude any chance of performing a bullet comparison analysis.</p> <p style="padding-left: 40px;"><b>Caution:</b> Avoid touching firearms or related evidence until they have been processed for latent prints.</p>	<ul style="list-style-type: none"> <li>- Develop fingerprints</li> <li>- Determine firearm operation</li> <li>- Possible to match known bullet from firearm to questioned bullet recovered from crime scene</li> </ul>

§ 305.8.17 Glass	
Collection/preservation technique	Information from laboratory analysis
<ul style="list-style-type: none"> <li>· Collect <b>all</b> pieces of broken glass. (Pieces of broken glass that can be placed together like a <b>jigsaw puzzle</b> may become <b>individualized</b> evidence.)</li> <li>· Dust glass fragments for fingerprints or send to laboratory for dusting.</li> <li>· Glass fragments from a suspected arson site or Molotov cocktail should be sealed in an airtight container. (The fragments may contain residue from accelerant.)</li> <li>· Collect glass fragments with tweezers.</li> <li>· Wrap each large fragment in cotton to prevent further breakage. (This will not affect any accelerant.)</li> <li>· Use tape to identify each fragment.</li> <li>· Package known glass fragments separately from unknown fragments.</li> <li>· Place small glass fragments or glass particles in plastic vials, pillbox or small box. (Lab analysis can often determine common origin based on the physical makeup and manufacture of the glass.)</li> <li>· Complete chain of custody receipts.</li> </ul>	<ul style="list-style-type: none"> <li>- Develop fingerprints from large fragments</li> <li>- May be able to tell direction of force that broke the original object</li> <li>- In cases involving multiple gunshots may tell the order in which breaks/holes occurred</li> <li>- Tell if unknown fragments/pieces came from known glass object</li> <li>- Can analyze chemical makeup of glass</li> <li>- Can tell direction a projectile came from</li> <li>- Can tell color and texture</li> <li>- May be able to put pieces/fragments with original glass in <b>jigsaw</b> format</li> <li>- Link suspect to scene</li> </ul>

§ 305.8.18 Gunshot Residue	
Collection/preservation technique	Information from laboratory analysis
<ul style="list-style-type: none"> <li>· Generally it is not necessary to obtain gunshot residue swabs when .22 caliber ammunition was used. (Only .22 caliber ammunition made by Federal Cartridge Company will test positive.)</li> <li>· Follow the instructions on the test kits when obtaining gunshot residue swabs.</li> <li>· Clothing/Fabrics containing suspected gunshot residue should be packaged separately and sent to the laboratory for analysis. (If the item(s) contain blood or other body fluids, <b>air-dry</b> per instructions given for blood stains.) Each item should be in a separate container.</li> <li>· Send weapon to the laboratory if an estimated distance from muzzle-to-target is desire.</li> <li>· Complete chain of custody receipts.</li> </ul>	<ul style="list-style-type: none"> <li>- Tell if person fired gun or not (Note: will not work on most .22 caliber ammunition.)</li> <li>- Possibly determine muzzle-to-target distance from residue on clothing or skin of victim (Note: This analysis is generally not effective if more than six hours elapsed from time gun was fired and swab was taken. Also, it is normally not effective if person washed hands prior to the swab being made.)</li> </ul>

§ 305.8.19 Hairs	
Collection/preservation technique	Information from laboratory analysis
<ul style="list-style-type: none"> <li>· Collect hairs from clothing, furniture, and other objects with tweezers. <b>Do not</b> crush the hairs.</li> <li>· Package loose hair(s) in a pillbox, glass vial, or pharmacy fold</li> </ul>	<ul style="list-style-type: none"> <li>- DNA if root is attached</li> <li>- Drug uses</li> <li>- If human or animal</li> </ul>

<p>paper packet.</p> <p><b>From Individuals</b></p> <ul style="list-style-type: none"> <li>· In violent assault cases (rape, assault, homicide) suspects and victims should be processed for cross-transfer of hair(s).</li> <li>· Hair combings (pubic and head) should be accomplished by medical personnel.</li> </ul> <p><b>Caution:</b> Use a <b>clean</b> comb for the pubic combing and <b>another clean</b> comb for the head.</p> <ul style="list-style-type: none"> <li>· Package loose hair from combings and the comb used for each area of the body (pubic and head) in separate containers. Label each container with collector's name and the date.</li> </ul> <p><b>Note:</b> Rape protocol kits that contain the necessary combs and containers may be purchased from several investigative supply firms.</p> <ul style="list-style-type: none"> <li>· Control hairs should be obtained by medical personnel after the combings.</li> <li>· Recommend 30-50 head hairs.</li> <li>· Recommend 20-25 pubic hairs.</li> </ul> <p><b>Note:</b> Ensure medical personnel get representative hairs from the entire body area involved.) <b>Control hairs</b> should be <b>hand plucked</b> from the body. <b>Do not use tweezers.</b></p> <ul style="list-style-type: none"> <li>· Package unknown and control hairs in vials or pill boxes.</li> <li>· Complete chain of custody receipts.</li> </ul>	<ul style="list-style-type: none"> <li>- May determine race</li> <li>- May determine age (if infant)</li> <li>- Body area the hair came from</li> <li>- Color</li> <li>- If hair fell out or was removed with force</li> <li>- If hair was cut</li> <li>- If hair was dyed or chemically treated</li> <li>- If hair is similar to known person's hair</li> </ul>
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§ 305.8.20 Impressions	
Collection/preservation technique	Information from laboratory analysis
<p><b>Footprints</b></p> <ul style="list-style-type: none"> <li>· Photograph footprint impressions prior to casting. Use a ruler to note scale. The ruler must be placed at the same depth as the tread pattern. For impression in soil, it may be necessary to remove some of the soil adjacent to the impression so the ruler can be placed at the same depth as the tread pattern.</li> <li>· Preserve footprint impressions with a plaster cast. (Casts should be reinforced using wire screen, small pieces of wood or similar item.)</li> <li>· Place collector's initials and the date into the almost dry cast.</li> <li>· Place dry cast in heavy paper and place in a protective box or similar container.</li> <li>· DO NOT remove soil from the cast.</li> <li>· Collect suspect's shoes to compare with the casts. (DO NOT remove any soil on the suspect's shoes.)</li> <li>· Complete chain of custody receipts.</li> </ul> <p><b>Note:</b> There has been some success in preserving footprints found in water by using "dental molding</p>	<p><b>Footprints</b></p> <ul style="list-style-type: none"> <li>- May be compared to known footprints</li> <li>- May tell size and manufacturer of shoe</li> <li>- Possibly tell style of shoe</li> </ul> <p><b>Tireprints</b></p> <ul style="list-style-type: none"> <li>- May be compared to known tires</li> <li>- May tell size and brand of tire</li> </ul> <p><b>Toolmarks</b></p> <ul style="list-style-type: none"> <li>- May tell size and characteristics of tool that was used</li> <li>- May be compared with suspect tool</li> </ul>

<p>compound."</p> <p><b>Tireprints</b></p> <ul style="list-style-type: none"> <li>· Follow procedures for footprints, above, for collecting and preserving tire impressions.</li> <li>· Make plaster casts of tires from suspect's vehicles for comparison with unknown tire impressions.</li> <li>· Complete chain of custody receipts.</li> </ul> <p><b>Toolmarks</b></p> <ul style="list-style-type: none"> <li>· Photograph impressions and use a ruler for scale.</li> <li>· <b>Generally</b> it is best to take the <b>entire object</b> containing the tool impression or to <b>cut out</b> the area of the object containing the impression.</li> <li>· Liquid silicone casting material is one method that may be used to <b>cast</b> the tool mark impression when it is not possible to seize the object containing the impression.</li> <li>· Seize any suspect tools for comparison.</li> </ul> <p><b>Note:</b> The tool(s) should be wrapped in tissue paper to <b>protect</b> the tool from damage and to <b>preserve</b> trace evidence such as paint chips, hairs, or similar items.)</p> <ul style="list-style-type: none"> <li>· Complete chain of custody receipts.</li> </ul> <p><b>Caution:</b> <b>Never</b> place a suspect tool into, or on, the toolmark impression, as this can damage or destroy the impression's evidentiary value.</p>	<p>Note: Each of the above types of impressions <b>may be</b> individualized to a person, vehicle or tool based on wear patterns and/or other minutia.</p>
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§ 305.8.21 Ignition Devices (Arson/Explosion)	
Collection/preservation technique	Information from laboratory analysis
<ul style="list-style-type: none"> <li>· Ignition devices in arson/explosive cases may range from the simple (match) to a complex (electronic timing device).</li> <li>· Collect suspect ignition devices and package accordingly.</li> <li>· Matches should be placed in glass vials or pillboxes.</li> <li>· Lighters may be placed in pillboxes or similar container.</li> <li>· Electronic devices or their debris may be packaged in boxes or similar containers.</li> </ul> <p><b>Caution:</b> Do Not assume that the ignition device has been consumed in the fire/explosion, as this is not always the case.</p> <ul style="list-style-type: none"> <li>· Complete chain of custody receipts.</li> </ul>	<ul style="list-style-type: none"> <li>- May be able to determine type of electronic device used from fragments</li> <li>- May develop fingerprints if device large enough</li> <li>- May tell manufacturer of device</li> <li>- May tell chemical makeup</li> </ul>

§ 305.8.22 Knives (Stabbing Weapons)	
Collection/preservation technique	Information from laboratory analysis
<ul style="list-style-type: none"> <li>· <b>Avoid</b> handling the weapon as much as possible. (The weapon may contain fingerprints.)</li> <li>· Process weapon for fingerprints. (<b>Note:</b> Normally it is best to let laboratory technicians process weapons for fingerprints.)</li> </ul>	<ul style="list-style-type: none"> <li>- May develop fingerprints</li> <li>- May obtain trace evidence (hairs, fibers, or blood)</li> <li>- Trace evidence may reveal</li> </ul>

<ul style="list-style-type: none"> <li>· If weapon contains blood or other fluid, it should be <b>air-dried</b>.</li> <li>· Wrap the blade or point in tissue paper to <b>preserve</b> possible trace evidence such as <b>hairs</b> or <b>fibers</b>.</li> <li>· If sending to the laboratory for fingerprint processing, the weapon should be securely fastened in a container that will preserve any latent prints or trace evidence.</li> <li>· Complete chain of custody receipts.</li> </ul>	<p>information previously listed for type of evidence.</p> <ul style="list-style-type: none"> <li>- May determine manufacturer and type of weapon</li> </ul>
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§ 305.8.23 Paint	
Collection/preservation technique	Information from laboratory analysis
<ul style="list-style-type: none"> <li>· Collect loose paint chips by picking up with tweezers or similar device.</li> <li>· Place paint chips in pillbox, vial or similar container.</li> <li>· Collect comparison paint standards as follows:</li> <li>· If the item is small; collect the entire item. Place the date and collector's initials on the item.</li> <li>· If the item is large, scrape off specimen(s) down to the bare metal or wood.</li> <li>· If the paint is wet, let dry before collecting.</li> </ul> <p style="text-align: center;"><b>Caution:</b> Do not place paint chip specimens in envelopes.</p> <ul style="list-style-type: none"> <li>· Package comparison specimens like chips.</li> <li>· Complete chain of custody receipts.</li> </ul>	<ul style="list-style-type: none"> <li>- Color and chemical make up of paint</li> <li>- May be able to make comparison of suspect paint and the object of origin (e.g., vehicle).</li> <li>- May be able to tell manufacturer and type of paint</li> <li>- Can tell texture of paint</li> <li>- Can tell layers</li> <li>- May be able to tell year, make, and model if from a vehicle</li> </ul>

§ 305.8.24 Paper	
Collection/preservation technique	Information from laboratory analysis
<ul style="list-style-type: none"> <li>· Collect paper products: food wrappers, cigar/cigarette containers, scrap paper, paper fragments, and similar items by using tweezers.</li> <li>· Place each item in a plastic protector to preserve possible latent prints.</li> <li>· Label the plastic protector with the collector's initials and the date.</li> <li>· Collect letters, notes and other large paper documents as noted above, and place in plastic protectors, as noted above.</li> </ul> <p><b>Note:</b> Information contained on burned documents can often be read by laboratory technicians. This type of document should be carefully placed in a plastic protector and packaged in a firm (unbendable) folder so as to prevent its destruction. <b>Note:</b> Note condition of the document(s) on the outside cover of the package to alert laboratory technicians.</p> <ul style="list-style-type: none"> <li>· Complete chain of custody receipts.</li> </ul>	<ul style="list-style-type: none"> <li>- Develop fingerprints</li> <li>- If fragment may be able to piece to original document in <b>jigsaw</b> format</li> <li>- If charred, may be able to read contents</li> </ul>

§ 305.8.25 Questioned Documents	
Collection/preservation technique	Information from laboratory analysis
<ul style="list-style-type: none"> <li>· Collect any document that may be considered to be a</li> </ul>	<ul style="list-style-type: none"> <li>- May tell age of document</li> </ul>

<p>fraudulent writing or signature or that has been used in the commission of a crime, <i>e.g.</i>, bank robbery.</p> <ul style="list-style-type: none"> <li>· Place the original document(s) in protective plastic covers.</li> <li>· Do not fold, staple or in any other way mutilate the original questioned document.</li> <li>· Photograph the document(s).</li> <li>· Obtain <b>known handwriting</b> or <b>typewriting</b> exemplars from all suspects.</li> <li>· Obtain handwriting exemplars from suspects as follows: <ul style="list-style-type: none"> <li>· Obtain two or three full pages of a long document.</li> <li>· Obtain 20-30 samples of signatures or use of limited words.</li> <li>· Dictate the contents of the questioned document.</li> <li>· Do not help with spelling or grammar.</li> <li>· Use the same or same type-writing instrument.</li> <li>· Use the same type of paper or document.</li> </ul> </li> <li>· Obtain typewriting exemplars/standards from all suspect machines as follows: <ul style="list-style-type: none"> <li>· Take the ribbon or ribbon cassette. Cassettes contain all writing accomplished while using that cassette.</li> <li>· Get two or three pages of writing and insure that all keys are used, both upper and lowercase keys.</li> <li>· Type two or three copies of the questioned document using the exact contents of the document.</li> </ul> </li> <li>· Obtain ink specimens/standards for comparison, as follows: <ul style="list-style-type: none"> <li>· Collect known specimens in the original containers.</li> <li>· Collect samples of known documents that were made with the same instrument/ink.</li> <li>· If ink/instrument used is unknown, collect samples of inks/instruments that might have been used.</li> </ul> </li> <li>· Place <b>all known</b> writings in protective plastic covers. Mark with collector's initials and the date obtained.</li> <li>· Complete chain of custody receipts.</li> </ul>	<ul style="list-style-type: none"> <li>- May be able to tell ink used and thus, possibly date the document</li> <li>- May be able to compare questioned to known handwriting or typewriting</li> <li>- May be able to compare document to writing found on typewriter ribbons or cassette ribbons</li> <li>- May determine year and manufacturer of paper</li> <li>- May find erasures, impressions, alterations and/or additions to contents of documents</li> </ul>
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§ 305.8.26 Ropes/Bindings	
Collection/preservation technique	Information from laboratory analysis
<ul style="list-style-type: none"> <li>· Collect any ropes or other binding materials (twine, string, cordage).</li> <li>· Package in plastic bag and seal.</li> <li>· <b>Do not untie or cut</b> any knots. <b>Cut</b> the binding away from knots and <b>retie</b> the two ends of the binding with string.</li> <li>· Collect comparison bindings (rope, twine, string or cordage) found on the suspect(s) or in the suspect(s) residence, vehicle or place of business. (Package the same as the unknown binding(s), above.)</li> <li>· Complete chain of custody receipts.</li> </ul>	<ul style="list-style-type: none"> <li>- Tell what material was used to manufacture rope/binding</li> <li>- May be able to tell common origin</li> <li>- Knots may be linked to a certain person or profession</li> </ul>

§ 305.8.27 Soil	
Collection/preservation technique	Information from laboratory analysis
<ul style="list-style-type: none"> <li>· Collect dry soil evidence and place in box or similar package.</li> <li>· Collect mud or caked soil in <b>lump</b> form. (Package in plastic bag or small box.)</li> </ul>	<ul style="list-style-type: none"> <li>- Can determine mineral composition</li> <li>- Can determine common</li> </ul>

<ul style="list-style-type: none"> <li>· Place <b>lumped</b> soil in protective padding, such as cotton, if it is desirable to keep the lump intact. (This may be the case in a hit and run vehicle investigation.)</li> <li>· Place any footwear, clothing or other soil-bearing object in plastic bags. (DO NOT remove the soil prior to sending the item to the laboratory.)</li> <li>· Collect soil standards within <b>100 feet</b> of the crime scene.</li> <li>· Collect approximately ½ pound of soil at 15-20 foot intervals around the crime scene. Be sure to get samples from all four sides of the scene. Place in box or similar container.</li> </ul> <p style="margin-left: 40px;"><b>Caution:</b> Soil samples/evidence should not be placed in envelopes or glass containers.</p> <p style="margin-left: 40px;"><b>Note:</b> Core soil samples for time of death estimates can be readily obtained by using short sections (3" to 6" in length) of PVC pipe. The pipe can be used as a container by capping both ends after collection of the sample.</p> <ul style="list-style-type: none"> <li>· Complete chain of custody receipts.</li> </ul>	<p>origin</p> <ul style="list-style-type: none"> <li>- Can be used to estimate time of death</li> <li>- Can be used to link suspect(s) to crime scene</li> </ul>
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§ 305.8.28 Tools	
Collection/preservation technique	Information from laboratory analysis
<ul style="list-style-type: none"> <li>· Seize any suspect tools for comparison.</li> </ul> <p style="margin-left: 40px;"><b>Note:</b> The tool(s) should be wrapped in tissue paper to <b>protect</b> the tool from damage and to <b>preserve</b> trace evidence such as paint chips, hairs, or similar items.)</p> <ul style="list-style-type: none"> <li>· Complete chain of custody receipts.</li> </ul> <p style="margin-left: 40px;"><b>Caution:</b> <b>Never</b> place a suspect tool into or on a toolmark impression, as this can damage or destroy the impression's evidentiary value.</p>	<ul style="list-style-type: none"> <li>- May develop fingerprints</li> <li>- May recover trace evidence (hair, fiber or blood)</li> <li>- Test tool marks may be compared to questioned tool marks</li> </ul>

**Section 305.9**

**Some General Packaging and Preservation Tips**

- Whenever possible, evidence should be submitted to the lab intact, *e.g.*, blood, hairs, fibers, soil, *etc.* should be left on the carrier (clothing for example)
- Each item of evidence should be placed in **separate containers**. This protects the evidence from:
  - Contamination
  - Damage
  - Cross-transfer
- All items of clothing (or similar material) that are bloodstained, or that are damp with blood, urine, semen, or other fluid, should be air-dried and packaged separately in individual paper bags to insure a constant circulation of air. This helps to prevent damage due to mildew or mold, *etc.*
- Charred debris from known or suspected arson sites should be sealed in air-tight containers to prevent evaporation of volatile residues such as accelerants. Unused paint cans or tightly sealed glass jars may be used to package this type of evidence.

**Note:** The **effectiveness** of a crime scene search is **generally** dictated by the **expertise and ingenuity** of the individual(s) conducting the search. When in doubt as to the evidentiary value of an item, it is best to seize the item. **If one is to err, it is wisest to err on the side of caution.**

**Note:** Contact IOSHA for information concerning standards, equipment, and training in reference to Universal Precautions standards and Bloodborne Pathogens standards.

**Note:** Coroners with questions regarding OSHA guidelines or Universal Precautions may contact the Indiana State Coroners Training Board or the Indiana State Coroners Association.